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WORK RELIEF 1936-37

Works Progress Administration Continues

Present Set-Up to Undergo Few Changes If Proposals of Administrator Hopkins Are Consistent with Congressional Action

ON JULY 1st, 1936, the Federal Works Progress Administration will have completed one year of its program to provide temporary employment pending the absorption by private industry of a major portion of those on its rolls. That the objective has not even been approached, let alone achieved, is too obvious to need comment. In fact the number on relief has increased since July 1st, 1935. Under such circumstances the W. P. A. or a successor must be maintained. To drop 3,500,000 persons, on whom perhaps 10,000,000 others depend, from the rolls of work relief, would result in turmoil as well as suffering.

Anticipating favorable action by Congress, in the matter of appropriating additional monies to supplement those which remain from previous legislative allocation, Federal Administrator Harry Hopkins and his aides are already planning for another program of work relief. The proposed plans call for a new set-up beginning July 1st, 1936, and extending until July 1st, 1937.

It will be interesting to note what has been learned by those entrusted with the conduct of the 1936-37 proposals. Has the ineffectiveness of cumbersome, unnecessary and impracticable procedure been sufficiently appreciated to convince the administration that social theorizing must be subordinated to practical experience in any program, and that adequate planning must precede attempts to place people at work if confusion and criticism are to be minimized.

The proposals contained in the recent bulletin issued over the name of the Administrator indicate that the present structure of W. P. A. is to remain unchanged, except for minor modifications. One interesting feature is the definite announcement that sponsors will be required to prepare all plans and provide necessary inspection. It is not clear that this ruling will permit the assignment by W. P. A. of engineering personnel to existing public agencies for such purposes. If sponsors are compelled to finance engineering and inspectional services it is more than likely that many communities will receive little in the form of work relief for the very good and sufficient reason that they have already greatly reduced their professional and technical personnel because of financial difficulties.

The following excerpts, from the bulletin above referred to, suggest the policies likely to prevail:

"It is, however, essential to commence at once preparation and planning for an orderly continuation of Work Progress Administration operations for twelve months, beginning July 1, 1936. This should be done on the assumption that there will be no radical change in Works Progress Administration organization and procedure."

* * *

"In the promotion of new projects, emphasis should be placed upon sponsors' contributions. Small consideration should be given to a project on which a reasonable sponsor's contribution is not forthcoming, unless it is included in a community program on which the average contribution is an adequate one."

* * *

"Sponsors should furnish all necessary engineering and architectural designs and pay the salaries of all personnel that they consider necessary to make their own inspections of projects.

"More emphasis than formerly should be placed upon the sponsor's discharging his responsibility for the submission of adequate plans and designs. It is obviously not reasonable to require that a sponsor complete plans and designs for an elaborate structure before the project application has been approved. However, he should be required to submit adequate preliminary plans and be made to understand that the project will not be started until complete plans and designs have been furnished. This applies not only to construction projects but also to those of a statistical survey and research nature where concrete plans and work procedures are obviously essential to the efficient execution of the work."

* * *

"In submitting new projects for approval, State Administrators shall determine before submission that labor is available to execute them. This applies particularly in rural areas. Numerous proposals for large construction operations in sparsely settled sections have been approved in Washington on the recommendation of State Administrators when proper consideration in the field would have shown that the project could not be operated successfully except by transferring workers from long distances. The failure to execute such projects results in disappointment to the sponsors and embarrassment to the administration."

* * *

"The State Administrator, in approving individual project applications must take a state-wide view of his program to see that each project which he approves fits into a coordinated scheme for permanent betterments. To this end, it is highly important, where state planning boards or other local planning agencies have been organized, that these bodies be consulted with regard to project proposals which are presented to State Administrators. Definite preference should be given to

(Continued on page 25)

TRAINED MEN FOR ENGINEERING

A Justification for Restriction of Practice

Derivation of Term Suggests That the Engineer Is One Who Creates Through Knowledge Licensing Viewed as Criterion

By
HAROLD R. TOWSE

FROM the beginning of this century and especially since the war, there has been an unprecedented advance in science and engineering works of all kinds. As the years go by there is more and more need for trained men. Increased knowledge of processes and equipment is necessary for reasons of economy, efficiency, safety and health. The fact that trained men are necessary must be recognized. The engineering profession cannot afford to be satisfied with mediocrity. Neither can it afford to be governed by sentimentality or a definition in the dictionary which may be inadequate for present-day demands.

The New York Times of January 17, 1936, stated editorially: "How utterly dependent we are on the engineers! They and the scientists hold us in the hollow of their hand. . . . They constitute a new ruling class. Destroy them and the country would be laid low. Disease would decimate us, transportation would be impossible, telephone and telegraph would be silent, starvation would stalk in the cities, factories would stand idle." In the face of this, can the engineering profession afford to betray its trust in allowing the use of the designation "engineer" by anyone who may desire to do so? Does the engineering profession propose to let down the bars and let anybody go through in the face of increasing demands for safety, health, economy and efficiency?

What is an engineer? The name is derived from the Latin meaning to produce, or design, or invent. Apparently there was no connection with the operation of engines. Littleton's Latin Dictionary published in 1723 states under "engine"—"An engineer that *maketh* engines." It says nothing about operating the engine.

The Lexicographer's column of the Literary Digest supplies the following information: "The term 'engineer' has been in the English language since the early fourteenth century at least. It meant at that time 'one who designs and constructs military works for a type of defense.' A century later the meaning was extended to 'one who designs, contrives, or invents, as an author or designer.'"

Not until the engineering profession is a single standard profession in which an engineer is defined as a man of high intellectual honesty, thoroughly trained in the fundamentals underlying all engineering work, with some essential knowledge of the elements of all branches of engineering and with additional specialized knowledge and training in one major branch of engineering will it have the power and prestige it deserves.

An editorial in "Power," May, 1935, states: "License laws, as a rule, are designed to keep out of responsible positions, the unexperienced, the uninformed, the incompetent, the untrustworthy individuals who are a detriment to the plant and a danger to fellow workmen. The required knowledge and experience usually specified are representative of that required by concerns that have a reputation for discrimination in the selection of their employees for specific purposes, and in the opinion of engineers generally those requirements are reasonable."

State licensing of engineers is not aimed at a class but is enacted to maintain standards that will meet the advance of engineering knowledge and practice. The professional license attests knowledge of the fundamentals of engineering. It does not seem unreasonable to expect that those *who are in responsible charge* of engineering operations of any kind, such as design, operation, management or any other engineering activities, should have a basic knowledge of engineering and should be required to meet certain minimum requirements of education and experience before being allowed to take such responsibility. Employers and the people at large will benefit by having trained men in charge of operations.

Power plant operators who qualify as licensed professional engineers should need no further license for such work. The engineering profession cannot afford to allow persons whose knowledge is restricted to a narrow phase of engineering to call themselves engineers any more than the medical profession will allow a person who has not gone through the full medical training to call himself a physician, for there can be no unity with varying standards.

Drivers of automobiles are licensed by the states as "operators." Men who operate power plant equipment under the supervision of a professional engineer should likewise be licensed as "operators" for they cannot be classified as "engineers" in the modern sense of the word as recognized in newspaper editorials and professional journals. The engineering profession cannot afford to have its standards set by any but trained men.

Licensing and restriction of the title will not put men out of jobs. These acts will assure jobs to competent men. Neither will anyone be restricted from going as far as he likes, if he has the stuff in him to do it.

PUBLIC WORKS APPROVAL

Seen as the Surest Means to Employment

House of Representatives Applaud
Address Replete with Evidence

By
ALFRED F. BEITER, M.C.

DURING a recent Congressional consideration of the Interstate Commerce Act, Representative Alfred F. Beiter, of New York, requested and received permission to proceed out of order for a few minutes.

The following remarks upon the subject of public works were delivered and written into the Congressional Record. They are significant in that the author sets forth a comprehensive brief in support of public works as the surest means toward the attainment of a condition of widespread employment.

"In his recent message to Congress the President asked for an appropriation of $1,500,000,000, and added that he wanted this money for the Works Progress Administration, stating that it was the responsibility of that agency to provide work for the destitute unemployed.

The works program was inaugurated with the purpose of giving employment to those on the relief rolls, and this restriction has made it impossible for those who are not actually reduced to receiving charitable aid to secure needed employment. Numerous complaints are being received regarding the limitation thus imposed on W.P.A. jobs, and judging from conversations I have had with other Members of Congress this dissatisfaction is widespread.

The fact that a man wants to be independent and pay his own way should not prevent him from securing work if he wants it. It should not be necessary for applicants to first accept a dole before they can qualify for a chance to earn a decent living. Concrete examples of this unfair discrimination are brought to my attention every day. A survey of the situation in various States would bear out the fact that there are more taxpayers in need of work relief than those actually receiving welfare aid. By the term "taxpayer" I refer to those citizens who have for years been supporting the city, county, State and Federal Government through school, highway, municipal property, and other tax assessments.

Now that the Congress is preparing to consider the question of extending or continuing the Federal relief program, I think it opportune to compare the results obtained from the past expenditures for this purpose.

Since June, 1933, I have been exceedingly interested in the Public Works construction program. This program is not to be confused with the Works Progress plan; they are as unrelated as night and day. At that time the country was economically ill, to say the least, and one of the important treatments prescribed was the construction of public works. An incentive was given to potential sponsors of projects in the form of grants from the Federal Government equaling 30 percent of the labor and materials.

However, there was no existing agency equipped to handle such a great undertaking, nor had any comprehensive plan of public works been formulated. No studies had been made during a period unruffled by economic distress, a time which would have been conducive to clear thinking and proper selection and distribution of projects. Consequently it became necessary to formulate an agency without previous experience to undertake this work. It was a tremendous undertaking, and Secretary Ickes should be congratulated on the result of his efforts in formulating the P.W.A., an organization noted for its integrity and professional ability.

There has been some criticism of the P.W.A. for its alleged slowness of action during the first program. This has been made, however, by those not realizing or those preferring not to acknowledge the lack of previous planning, the existence of usable statistics, and data upon which to proceed. Neither do they mention that now the P.W.A. is a going concern, having all the necessary personnel, organization, plans, and statistics necessary for proper, efficient, and speedy operation, and that this has been unequivocally proven in the E. R. A., P. W. A. program and the latter part of the N. I. R. A. program.

Under the E.R.A. program only $339,381,748 was allocated to the P.W.A., and $200,000,000 of this was withheld until September, 1935. In spite of this last date, however, the P.W.A. had allotted $327,592,251 by December 31, 1935, for 4,158 different projects. Furthermore, on December 31, more than 80 percent of the actual construction contracts had been let, and bids had been received and contracts were about to be awarded to bring this total to 93 percent.

In connection with the value of public works as a stimulant to recovery, much data has been published to show the direct gainful employment furnished through the construction industry. This has been broken down into man-hours, total cost per man-year, Federal cost per man-year, and number of people put to work directly, but little has been said regarding those finding employment indirectly. It is true that indirect labor has been mentioned by those who have pondered the problem, but the references are mainly vague.

The ramifications of the construction industry are so numerous and important that they affect every corner of the country. The business and social activities of our country are mutually interdependent, and all must be functioning properly to create a balanced economic life. When a stimulant is applied to aid recovery, it must be injected into the blood stream of our interdependent existence. We cannot hope to effectively aid recovery unless this course is pursued.

Fortification of the construction industry does this very thing. For instance, the raw materials used in construction have widespread occurrences in nature and they must go through many stages of processing and transportation before actual use in construction works. Stone must be quarried, crushed, separated into sizes, and mixed with other materials in proper amounts. Limestone and gypsum must be quarried and converted into cement and plaster. Iron ore must be mined, shipped, smelted, and converted into structural and reinforcing steel. Cotton must be grown, ginned, shipped, and woven into fabric for tires, belts, and containers. It is definitely a progression affecting every important factor of our economic structure.

The mechanics followed in the production of construction projects are not unlike those of a tree in producing fruit. For instance, the numerous tree roots take elements from the ground and convert them into essentials necessary for life and production. Similarly the producer—goods industries secure raw materials from Nature and refine and convert them into usable products. The tree conducts the essentials produced by the roots through the alburnum of the trunk to the branches. Likewise, the transportation industries convey the products of the producer-goods industries to the various branches of the construction industry.

The leaves of the tree create a further chemical change essential to life, and the blossoms produce fruit. In the construction industry the many types of projects are distributed to the appropriate branches of industry where proper engineers and contractors plan, assemble and construct the ultimate project.

The importance of the construction industry is clearly shown by table 1, which I will later ask to have inserted in the Record, which indicates an average annual expenditure of $8,894,875,000 during the years from 1926 to 1933 for direct construction.

In 1928, $12,000,000,000 was expended for construction. This reduced to approximately $11,000,000,000 in 1929 and then collapsed to a little over $3,000,000,000 in 1933. This abnormal fluctuation, with its accompanying disturbances in other industries, was a major factor contributing to the depression.

According to figures published by the Bureau of Public Roads, approximately 122,000,000 people (1925-33) are normally supported by 47,000,000 gainful workers, 13,000,000 of whom are directly in the construction industry and related producer-goods industries. The remaining 34,000,000 are in the consumer field producing and distributing goods consumed by the entire 122,000,000.

Since unemployment decreases consumption and increases dependency, when 7,000,000 lost employment through collapse of the construction industry it caused a further unemployment, it has been conservatively estimated, of 4,000,000 people in the consumer field. Statistics on this will be shown in a table to be inserted in the Record.

In order to show the effect of construction upon indirect labor several manufacturing organizations, federal bureaus, and construction organizations have conducted extensive research and prepared comprehensive reports of their studies. The published reports necessarily deal with statistics which are a few years old, for a thorough study requires many months to complete. Furthermore, the compilation of the basic statistics lag behind the end of the calendar year. However, for the purpose of this study they are adequate, since it is proof of the employment distribution that is paramount, not mere figures.

On September 21, 1933, the Construction League of the United States, a federation of practically every association interested in construction work, published a report in the Engineering News-Record entitled "Employment Values in Construction". This analysis points out that in 1929 the production of construction materials employed every tenth manufacturing worker and that this fabrication proceeded in a quarter of the country's factories and mills. It also states that one of every five carloads of freight moved carried construction materials, and that 8 percent of all wholesalers were engaged in the distribution of construction goods.

This presents an interesting picture, for it shows many States not normally considered as such to be heavy producers of construction materials, as for instance, Mississippi, Louisiana, Oregon, and Washington. It indicates these States as being greater producers than Massachusetts and Missouri, their importance being attributed to lumber production, which predominates in the South and Northwest.

Probably one of the most valuable analyses of public works expenditures that has as yet been published is given in An Economic and Statistical Analysis of Highway Construction Expenditures, a report published June, 1935, by the Bureau of Public Roads. This treats of a $100,000,000 highway expenditure to determine the amount of direct, indirect, and total employment furnished, the various industries affected, and the total value of business erected. The analysis is comparable to all public works, for highway construction includes every basic industry affected by general public works. It is true there will be some variation by reason of the greater refinement in processing materials for public works and in their greater value. Also, there will be some variation because of their difference in locations, highway funds being expended largely in rural areas and public work principally in urban areas. This affects the amounts paid to labor directly on projects. However, when both direct and indirect labor are considered, total accruals will be substantially the same as those developed in highway construction. Therefore, it is reasonable to assume that the total employment furnished per dollar expended is practically the same and the determinations in the report become of tremendous value in aiding one to appreciate the full effects of public works.

Some astounding facts are brought to light which should be known generally. It proves the need of public works as a stabilizing influence in times of economic distress.

For instance, from a direct highway expenditure of $100,000,000, neglecting reinvestment, $74,726,000 goes for direct and indirect labor and results in $231,000,000 of business value. I have prepared a table—No. 3—which will appear in the appendix itemizing these expenditures and showing the amount apportioned to 21 basic industries affected. The difference between salaries and wages and the $100,000,000—namely, $25,274,000—is divided into interest and margin and is available for reinvestment in the producer—and consumer—goods fields. When this sum is also broken down it shows that the entire $100,000,000 expenditure ultimately finds its way to wages and salaries in the following proportion:

1.	Direct construction	$24,391,000
2.	Investment in producer goods	50,335,000
3.	Reinvestment in producer goods	14,827,600
4.	Reinvestment in consumer goods	10,446,400

Table IV appearing in the appendix gives an analysis of the ultimate distribution to salaries and wages of the $100,000,000 expenditure.

In the final break-down including reinvestment the report shows that 102,690 persons would be employed for a year at an average rate of $970.

I have secured a table, No. 5, giving a complete analysis.

During periods of economic stress reinvestment in producer goods will not readily take place. In other words, funds which would normally find their way back to industry through capital investments will become temporarily stagnated, and consequently the results of this type of reinvestment have been discarded in analyzing the effects of public works. It should be considered, though, when studying the effects of a long-range program.

Reinvestment in consumer goods, however, is considered for this represents expenditures for cost of living alone, such as food, clothing, housing, amusements, and contingencies.

When the deduction for producer goods reinvestment is made the salaries and wages total $85,172,400, and represents a year's gainful employment for approximately 90,000 persons. This is approximately equal to 1.4 men working indirectly for each person employed on direct construction projects. Table VI gives the procedure followed in making this computation.

I cite these incontrovertible studies to prove that indirect labor benefiting from public works is an important factor and that, according to highway report, approximately seven men are employed indirectly for every five men employed on the construction site.

Table VII of the appendix shows the estimated cost, P.W.A. allotments, and funds supplied by applicants as distributed by States on December 31, 1935, Table VIII indicates the same allotments distributed by type of project.

As stated previously, the total P.W.A construction program as of December 31, 1935, under the E.R.A., consisted of 4,158 projects, the total cost of which is estimated as $748,547,711. Of this amount the Government has granted $327,592,251 to aid sponsors of projects in financing the construction.

According to completed and finally audited P.W.A. projects, 32.6 percent of the total cost goes for direct labor.

By applying this percentage to the $748,548,000 P. W.A. program, it indicates that $244,026,648 will go to direct labor. The remaining amount, or $504,521,352, when divided into indirect labor by using reinvestment percentages computed from Table IV of the appendix, shows that $393,512,352 will go to indirect labor. This is exclusive of producer goods reinvestment and represents only the first cycle of distribution. Table IX of the appendix gives a more complete analysis of the break-down.

This means that out of $748,548,000 P.W.A. program, 85.2 percent of the expenditure will go to direct and indirect labor and that approximately 208,570 man-years of direct labor and 339,527 man-years of indirect labor will result. This illustrates that approximately 1.62 men will receive employment indirectly for each one employed directly and that approximately 548,097 men will receive work for a 1-year period.

This being the case, the cost to the Federal Government per man-year is equal to $327,592,251, divided by 548,097, or approximately $598.

At the present time the Public Works Administration has many additional projects on file which have been submitted in good faith by political subdivisions scattered throughout the United States. It was represented to them that the Government would aid in financing these, and they incurred considerable expense in the preparation of plans, legal data, purchase of lands and in submitting applications, only to discover that funds were not available.

The projects include a wide diversification of type. There are schools, hospitals, jails, many types of buildings; streets, highways, bridges, sewerage systems, treatment plants, water systems, dams, wharves, and many others. Furthermore, they are scattered throughout the country and every State has many worth-while projects pending.

The Public Works Administration has analyzed these and divided them into two types. The first list represents those which are apparently ready to proceed with immediate construction and which can be carried direct to a successful completion. This group is known as list B and B1, shown in Table X of the appendix, and sets forth the amounts by States, and comprises 6,130 different projects, the total cost of which is estimated as $2,239,732,000. Of this amount $817,459,000 is requested in the form of outright grants.

The amount shown as the estimated cost of the pending B and B1 P.W.A. projects and the total amount of grants requested by their sponsors are not likely to be required in their entirety. Undoubtedly, some applications were filed by overzealous officials who, since filing the applications, find that they will be unable to proceed. This has happened in the past. Furthermore, legal and other extenuating circumstances will arise occasionally to prevent the sponsor's acceptance of a P.W.A. allocation. I believe, after a study of past experiences, that approximately 15 percent of the projects which are now pending will be unable to be constructed, and that $700,000,000 will be a sufficient sum to successfully complete the pending P.W.A. program.

The projects which would be constructed by a $700,000,000 P.W.A. program would be of a permanent nature and increase the wealth of the Nation by the total amount expended for them. Furthermore, the work would exert a tremendous stimulating effect on all industry, and as a result materially relieve the unemployment situation. Consequently I have introduced a resolution—House Joint Resolution 492—which would definitely allocate $700,000,000 to the Federal Administration of Public Works in order that the pending approved program may be completed, the intimated agreement with the sponsor fulfilled, and the benefits to industry and labor secured.

During the past year business employment and private enterprises have shown encouraging signs of revival. We are now recovering from an economic intoxication and despondency resulting from our former happy-go-lucky system of indulgence. Thanks to the country's vitality and the inherent will of the American people to survive the crises and respond to treatment. Let us not discard the tonic of effective public works at this time.

The prescription is not new. It was used over 6,000 years ago by ancient rulers, who placed thousands upon thousands of men on construction work during depression times to keep them in peaceful occupation, rather

(*Continued on page* 25)

TRAINING THE ENGINEER

Professional Education of Today

Delivered As an Address

To the Essex County Chapter, New Jersey Association of Professional Engineers

By
ALLAN R. CULLIMORE

FROM the standpoint of education, engineering is not a trade but a profession. Engineering education, as we view it, is not a training to develop highly specialized technical skill but an attempt to prepare a man for professional work which, today, is very broad and strikes very deep in its implications.

Someone has said, "Engineering is a career and a culture," and we might very well add that it is a philosophy, a point of view, a habit of mind, a method of attack on modern problems and furnishes about as efficient a preparation for modern life (if properly given) as any other course of training we know.

The engineer was, not so long ago, pretty much of a hired man; someone else made the plans, that is, the broad plans; somebody else appraised the human need and the public interest, and the engineer was hired to do the routine job of figuring and constructing, and when that routine job was done, he packed up his little bag and went somewhere else to be a hired man for someone else. It seems to us, in engineering education, that that condition is rapidly changing and changing for the better. Engineers are coming to be leaders, not only in the specific technical practices and intellectual gymnastics of their own profession, but in some of the broader basic lines of human endeavor. Engineers, as a matter of fact, are going into business in increasingly large numbers. A perusal of any engineering college alumni list will show definitely that a considerable proportion of the graduates are in business, closely allied to engineering it is true, but in business nevertheless. It might be safe to say in passing that today it is a very very exceptional business that does not have a direct contact with engineering in some of its phases.

If we look into this a little deeper, we find that a business, according to one definition, could be considered as any organization which operates for a profit. Profit doesn't necessarily have to be in dollars and cents; but it must be a profit in service rendered or in work done. All work of an operative or maintenance character whether it be the production of machines or consumable goods or transportation or communication or the management of highways or water supplies or sewage disposal is, in this sense, a business; and must be operated on what we are pleased to call business principles. A profit must accrue if the business is to continue.

In other words, engineering, as we see it today, is a business proposition involving the profits and concerned primarily with the handling of men, money, and materials.

It is always a helpful example to the writer to think of two of his classmates; one is now a Minister in the Canadian Government, and the other the Vice-President in charge of Finance of one of our largest mail order houses. Both of these jobs are primarily engineering jobs, and both are primarily jobs which were not thought to be engineering when we three graduated from the Institute of Technology in 1907.

These comments have been offered to explain the background. The next decade, perhaps the next twenty years in engineering education, will be characterized by development along these lines. We shall have construction work and perhaps a considerable amount of pioneer work along many lines, particularly abroad, but a very considerable proportion of the work of the engineer will center around operation, maintenance, and control, and for this it is absolutely necessary to have some knowledge of economics and finance; some of the broader social cultural and political problems which are basic in dealing with men and money and the relations of money to men.

It has always been a belief of the writer that the most important thing in any productive enterprise is the keeping of financial records, and in financial records, one should include not only records of cost and general financial statements, but plans and schemes of pay of all kinds, generally felt to be within the field of the efficiency engineer.

It is interesting to note that in the past ten or twelve years, the gradual inclusion in the curricula of colleges of engineering, of some form of bookkeeping or accounting so that there may be some knowledge on the part of those conducting business, or helping to conduct business, concerning the fundamental keeping of records. We glory, particularly those of us who are interested in surveying work, in the keeping of our notebooks, and yet one sees very good civil engineers flounder in the keeping of financial records to an almost unbelievable extent.

The giving of courses in general economics and management has grown consistently over the past few

years until now it has come to be generally believed that it is a basic factor in engineering. However, it is rather peculiar to see in some places courses in accounting and management and economics given to boys who have not the slightest idea of the principles or practices or technique of keeping a set of books.

The cultural side of engineering has been considerably stressed in the last ten or fifteen years with the idea of giving a man rather broader interest and sympathies. I think that somewhat of a mistake has been made here in trying to separate the cultural from the professional in engineering. After all, there is nothing that our profession does not properly touch and if we could make our culture dynamic enough to actually help, it would do as much to raise the general level of the engineering profession as anything we could do.

There have been reserved until the last, three general ideas which perhaps might be brought together for the sake of brevity, but which, in the very recent past, have been considered as fundamental in an engineering education as in any other education that has to do with the broader social emotional and political side of a man's life. After all, if we deal with men we have to recognize that a great many of the problems to be met are essentially political and broadly social, and are based upon certain fundamental emotional characteristics such as fear, anger, hate, intolerance, etc. While it might be possible to instruct young men in exactly the method in which we are to solve these problems or to give them a formula in which values are to be substituted, a great deal can and I think properly should be done to point out at least the tremendous importance of these particular values.

We have been very much interested in the past seven or eight years in trying to point out to upper classmen, that is, juniors and seniors, some of the very important factors, aside from academic ones, which operate for their success. We have stressed, particularly, the necessity for an understanding of some of the principles of human relations, the ability to understand and cooperate with fellow-men, and the responsibilities which young men have toward the general political and social scheme of things. We have gone so far as to suggest that certain manners and conventions have a bearing upon the life of the young engineer. In a word, our idea has been to develop the human side of a man so that we could have a successful human being on which to build the super-structure of a successful engineer.

This particular point of view, I think, could sum up our our own philosophy very well. It should not be misunderstood that we, in any way, lessen the insistence on those particular fundamental engineering subjects which go to make up a proper foundation in any good engineering school. The honors are not quite enough and we are anxious that a man be successful as a human being as well as successful as an engineer, and that he have some notion and some appreciation of the factors, the duties and the responsibilities which properly bear upon a well rounded success.

It will not be hard for engineers in any field to see the close correlation of the engineers' work of today with politics both in the proper and the improper sense. It is not very difficult to see that in handling men certain problems in psychology, particularly problems with a fundamental emotional basis, are extremely important. One is not mistaken in saying that about 90% of our industrial disputes are based on emotional grounds; anger and jealousy being the fundamental ones. In discussing general matters of professional interest with senior students for the past sixteen years, the writer has found that the fundamental troubles which bother these young men without a realization on their part, are those which have to do with attaining a reasonable amount of emotional stability.

Recently, upon arriving at his office, the writer picked up a printed letter from an engineer who is known by reputation to most engineers—Mr. Alfred P. Sloan, President of General Motors. Mr. Sloan is perhaps an outstanding example of the kind of man that an engineering school ought to hold up as a possibility to its students. To quote a part of a paragraph from Mr. Sloan's letter. (He speaks of a message which he is sending under separate cover to the stockholders of the corporation.)

"There will be presented in this message, however, for the consideration of the stockholders and for general discussion a problem of great importance—at least according to my belief. As a matter of fact, speaking fundamentally, I look upon it as one of the vital questions of today. It is a matter of concern to every one of us irrespective of what part we may take individually in the great scheme of things. It is the cornerstone of the foundation of our social and economic progress. It is an important factor as affecting our future security. I refer to the responsibility of industry in its relations to the community at large and to the national economy as a whole."

When and if engineers take a considerable part, and they are already taking some part in the greater development of our country professionally and industrially, this fundamental social viewpoint must be taken into account.

To sum up the whole trend and tendency of engineering education in the past decade or two has been to broaden the appreciations and horizons of the engineer so as to create a trained technician, but rather one who is a human being who can and should, as a professional man, be in a position to use his influence for the development of our common social and political institutions as well as for the development of those material things with which he confined himself in the past.

LA CARRETERA PAN-AMERICANA

The Modern Road to Romance

Is Monument to American Civilization

A Milestone Carved by Engineer

Forms Basis of Travelogue

By
J. W. BERETTA

MOST Americans are familiar with the classic folk story of the old cow that was never satisfied with the luscious grazing provided for her but spent all of her time gazing longingly over the fence at the grass in adjoining meadows beyond her reach. On hearing this story, however, few of them realize that it presents an accurate analysis of their average mental reactions, especially where traveling and recreation are concerned. The patriotic slogan "See America First" has made some headway since the World War, but "Elmer Gantry" and his family are still neglecting America's scenic and travel wonders with the fond hope that a tour of Europe will eventually become more than a dream.

This entire situation is nearing a change, and the romantic glamour of foreign travel will soon be within the reach of all Americans. Announcement that the Mexican section of the Inter-American Highway, or "La Carretera Pan-Americana," will be completed within the year opens a vista of exotic lands, undreamed scenic wonders, and the most colorful of the world's history. The International Highway Bridge crossing the Rio Grande at Laredo, Texas, is just a jumping-off place for Latin-America where modernity has joined hands with antiquity to welcome the northern traveler. This may soon be reached in the family car, without the necessity of tedious railroad rides or rough steamer trips, at a cost not exceeding that of the average modest vacation.

The completion of the Laredo, Texas, to Mexico City portion of the highway will unfold new delights to even the most jaded travelers, and there will be matters of interest for every conceivable taste. The shadowy names of Montezuma, Cortez, and Maximilian will intrigue the wayfarer in search of history, while the realities of the San Juan Teotihuacan Pyramids, snowy volcanic Popocatapetl, the heights of Chapultepec and the floating gardens of Xochimilco will occupy the attention of those in search of scenic beauty. The possibilities are so vast, however, that it is impossible to do them justice by the written word. All that will soon be necessary to make them a reality instead of a Burton Holmes phantasy will be to get back of the steering wheel, turn the radiator cap southward and travel.

As a fitting gateway to the unique wonders of Mexico, which await the traveler, we find the notable and stately concrete arch bridge spanning the Rio Grande between Laredo, Texas, and Nuevo Laredo, Mexico. This river is known to the natives of our neighboring republic as the "Rio Bravo del Norte," which means the "Savage River of the North," a name well merited on account of sudden and vicious floods. In order to withstand the furies of such floods, the International Highway Bridge is substantially constructed and is the only bridge in the world to be equipped with demountable sectional railings which can be quickly removed. The railings are made of aluminum of a type similar to that used in modern transport airplanes and streamlined railroad trains and each ten-foot section weighs only ninety-two pounds, or about a third as much as steel. These aluminum railings glisten in the bright sun like the family silver on parade at Thanksgiving dinner, and seem to be symbolic of the bright pleasures awaiting in the south.

Since the Spanish colonization of Texas, Laredo has been a location on the main artery of commerce between Mexico and Texas. In past days, this was known as "El Camino Real," which may be translated as "the King's Highway," or perhaps more liberally as "the Main Road." Thus the new highway is but an improvement and perpetuation of a part of an ancient trail, replete with history. Over two hundred years ago, the King of Spain granted a perpetual ferry franchise at Laredo to one "Capitan" Tomas Sanchez, leader of the Laredo colony, and the present bridge is still being operated under the terms of that ancient grant.

The international boundary on the bridge is marked by a monument of a very unusual type. This monument is constructed of aluminum and is also quickly removable in times of flood. It was erected by a group of farsighted ladies, forming the membership of the Pan-American Round Tables of Texas, and is the first monument in the world to be constructed by the women of one nation as a token of honor and respect for the women of another nation. As such, it is an additional token of Pan-American friendship which does not feel the limitations of borders.

The first one hundred and fifty miles of the highway from Laredo, Texas, leads the traveler to the thriving city of Monterey, which has been aptly called the Pittsburgh of Mexico, because of its many important heavy industries. The first forty-four miles of the highway has no turns and is the longest straight or tangent piece of highway in the world. Monterey has been a popular week-end resort for Americans residing near the border for the past several years and its popularity is increasing daily. Aside from many diversions to interest the sporting gentry, there is much mountain scenery and many points of historical interest surrounding the Rocky Mountain valley in which it is cradled. Particularly interesting is the ruin of the Bishop's Palace, or "Obispado," in which Pancho Villa

established headquarters during his historic forays in that vicinity.

As the traveler turns southward from Monterey, he enters a portion of Mexico which has never before been accessible to the tourist. He passes the unspoiled cities of Victoria and Valles, which for years have bloomed unseen by tourist eyes. He crosses numerous picturesque rivers and as each new mile is registered on the speedometer, new wonders continue to unfold. He is entering true tropical scenery and soon has the thrill of crossing the Tropic of Cancer, that mythical belt around the earth, parallel to, and in, the hemisphere north of the Equator.

Many quaint villages with obscure Aztec and Indian names are passed, but none of them have more interest than Tamazunchale (Indian for Frog Pond), which is pronounced Thomas and Charlie. This village nestles at the base of the mountains at the start of a stretch of road which has been pronounced as one of the greatest achievements in highway engineering in the world. In this stretch, the highway reaches a high altitude and clings precariously to mountain sides at many points. There are many places where drops of several thousand feet are noted just outside the stone guard wall. With the sublime grandeur of mountain scenery in its tropical, sylvan state, and the thrills of imaginary highway dangers, this stretch of road should be long remembered.

At Jacala, the dangers of precarious mountain driving are passed, and one can settle down to enjoy the land of the haciendas for the remaining miles into Mexico City. The approach to the Valley of Mexico is beautiful beyond description and on arrival one finds a stately city comparable in population to Detroit. Here is a modern city with every convenience, but also a city which has kept all of the charm of antiquity and history. In attempting to describe this wonderful and hospitable city, the written word is even less adequate than when applied to other portions of Mexico. Here, and in the surrounding country, is the Mexico of Prescott, the Mexico of Chautemoc and two emperors; the Mexico of such immortals as Hidalgo, Juarez, Diaz and Madero. Here is found the intermingling of the ancient culture of the Aztecs, and the proud heritage of the Conquistadores; the contrast of the peace and calm of ancient monasteries with the hustle and bustle of thriving modern commerce. It is, in truth, a veritable traveler's paradise.

The impending completion of the road from Laredo to Mexico City, however, is but a partial fulfillment of the most ambitious road building program the world has ever seen. Surveys have been made and plans completed for the eventual extension of the Inter-American Highway to Panama and South America. At the present time, many of the links in the road have already been completed, and it is believed that the not far distant future will bring the republics of Central America within the realm of accessibility to motorists of the North. Guatemala, the land of the Quetzal, El Salvador, the smallest of the Central American republics, Honduras, the land of the banana, Nicaragua, the famed haunt of Sandino, San Jose in Costa Rica, and finally the Panama of Balboa and Roosevelt's canal will all in turn greet the gasoline nomads as they reach the end of a 3,300 mile trek.

In these sunny, tropical Central Americas, the traveler will find lands drenched in history. He will find seaports where many legends of Spanish galleons and fabulous riches are handed down as folk lore. He will encounter the names of the pirates of old who preyed on these galleons and the settlements of the new world. Pedrarias, the bloody butcher, Morgan, the buccaneer, Pizzaro of Peru, Richard Sawkins the pious pirate, and Sir Francis Drake are still familiar names in this old but ageless country. Pirate gatherings in the Tortugas, the burning of Panama City by Morgan, the protection of the golden altar of the Church at San Jose are stories which form a sharp contrast to the modern reality of the Panama Canal.

As a tangible evidence of vital interest in the completion of the Inter-American Highway, the Congress of the United States appropriated $1,000,000 in June, 1934, as a contribution toward this work. This sum is to cover all expenses deemed necessary by the President to enable the United States to cooperate with other governments in the road construction. Recently, the Public Roads Bureau announced that President Roosevelt has approved a program of bridge construction in Central America costing $340,000. This sum will be used to construct bridges over the Chiriqui River in the Republic of Panama, the Choluteca River in Honduras, and the Tamazulapa River in Guatemala. Other equally interesting announcements are expected shortly as this highway nears the reality of completion.

Communication is the lifeblood of man's existence, and the very progress of civilization depends on its extension and improvement. This new Inter-American Highway, therefore, is definitely one of the great milestones in the forward march of the Hemisphere of the Americas. It will impart new and important meanings to the term Pan-America, and will do more to wipe out the limitations of boundaries than all of the diplomats of the world have ever been able to do so. In its construction huge armies of men have been mobilized, but, incongruously in this world of strife, they have been armed with the constructive tools of peace rather than the destructive tools of warfare.

Quietly and unobtrusively, the Mexican Government has been the standard bearer of the Inter-American Highway and has set the example which the other countries of Latin-America are preparing to follow. With actual tangible accomplishment rather than idle dreaming, the moving hand has written an indelible trail of progress across hill and dale, river and mountain, and meadow and forest. Conceived and carried out during years when the rest of the world was sorely beset by dark depression, this highway stands out as one of the greatest and most enlightened public works in the history of mankind. Ancient rulers erected pyramids, temples and castles for the aggrandizement of themselves and their gods, while our modern democracies are completing greater works for the benefit of all mankind.

SERVICE TO THE NATION

Floods Call for Concerted Action

The Professional Engineer Can Save Country If Business and Politics Will Allow

By
HARRY E. HARRIS

THE seasons and the years roll by and other seasons and years take their place, people are born and people die, and by comparison with all such transience this old earth seems to be permanent and unchangeable.

However, this is far from true, the earth is undergoing a rapid deterioration in some of its civilized portions, including nearly all of the United States. Not rapid perhaps when gauged by seasons or even years, but undeniably so when measured by generations.

Water, upon which all life, animal and vegetable, depends, is aided by our civilization, also the insidious destroyer that is responsible for the undermining and destruction of nature's most valuable gifts to man. Without control it washes down millions of tons of silt, topsoil that Nature took hundreds and thousands of years to form, depositing them in river beds or carrying them on into the sea, leaving behind devastated, eroded, unfertile areas.

Man has ruthlessly assisted, by cutting down the forests, denuding the surface of the ground by unscientific tillage, draining swamps and straightening and deepening run-off ditches and gullies. Thus the rain falling on the earth, instead of being retained by spongy masses of tree, bush and grass roots, low hollows, crooked brooks, swampy places, terraced farm fields, ponds, etc., and thereby maintaining a higher water table and moisture throughout the season, strikes instead the unprotected loose earth, starts innumerable gullies, drains silt and water at a rapid rate so that with right weather conditions all converge on the larger streams in such manner as to cause devastating floods which leave in their wake tremendous loss of life and property.

It is not the rain that falls in the locality of a river that is the menace. Rather is it the widespread rainfall over an entire water-shed which deprived of adequate time factors runs rapidly off, converges, rushes on to the sea in the form of a deluge.

Building dams for huge power and storage reservoirs and straightening and deepening the main lower channels with dikes and levees may give protection against high water in the lower reaches but does nothing to prevent flood formation by excessive run-off in the higher levels.

The wise frontiersman lays his traps and poison for the wolves during the summer mating season while they are scattered. He would be a fool to wait until they had made the pack, driven by cold and famine, had attacked his settlement and slaughtered his stock, when his only protection against their superior strength would be to dam up his doorways and windows. And yet this foolish procedure is just what flood control generally means. Merely flood protection instead of flood prevention. By killing as many of the wolves as he can in their breeding season, the frontiersman preserves the wild game to his uses and reduces the number which can mobilize in the winter.

By agricultural conservation methods, reforestation, terracing and many other methods of investing in the bounty and fertility of our land we can do much to retain the moisture where it is needed and stop that disease of our very land which, if not stopped, will produce, as it has already done in many sections, deserts and wildernesses in places that are now still fertile. This disease has been very active during the last 30 years and one estimate is that in 50 years more, if sensible action is not now taken to stop the malignant decay, only about 8% of really fertile land will remain in the United States.

Another opinion is that if nothing is done to stop the depletion, this country of ours has less than 100 years of virile existence and that if we are to do anything about it we have less than twenty years to correct our errors, prevent further mistreatment and rebuild that which we have destroyed.

While prophesies and estimates are not necessarily accurate, the writer's observation on erosion, floods, irrigation and drainage in many sections of the United States prompts him to concur in these probabilities and he does not feel warranted in calling such fears exaggerated. The problem is accelerative. Each trickle, wash arroyo, and gully formed in unprotected soil by the rain is a path for every succeeding rain to make larger, and the larger it gets the faster the rate at which it can enlarge. These are the feeders that converge to make the higher flood water levels to combat in the lower reaches.

The recent, but often predicted, flood disasters throughout the country with their appalling loss of life, health, property and injury to the economic welfare of the Nation have momentarily aroused the people. The Red Cross, governors, senators, representatives, army engineers, civic organizations, localized regional planning committees and various other groups and agencies are pressing for action. All are eager to help, nay, some to do it all; haste is the essence of their actions. Outside of rehabilitation and human restoration, undue haste is unnecessary and may defeat its own purpose.

From the sidelines, the present situation seems like a sudden coming together of a number of people speaking different languages gathered around a pile of lumber without a complete plan, but all imbued with the mutual idea of building or of assisting in the building of a house. Grabbing hastily at the lumber they set it up and enthusiastically nail it together, perhaps and most likely forgetting the foundation and the roof, or

other fundamentals, but each in his zeal trying to outdo the other. During such pre-occupation it is possible that some of the lumber might be diverted by pretended enthusiasts to other purposes. Under such circumstances it is obvious that none has any great perception as to the sequence of operation necessary in building a house or the need of correct plans or specifications. "They don't know where they are going but they are on their way".

The question of flood control, prevention and protection, is unquestionably a Professional Engineering problem from the Agricultural Engineer at the source to Army Engineering at the main navigable channels and outlets.

As the building of the house should be planned in advance, even to its minutest detail from the foundation up, and everything included in the plans and specifications, so should the flood prevention program be previously and carefully worked out in detail, starting at its source and not at its discharge point or outlet As the operations in building should be in their proper sequence starting with the masons and finishing with the interior decorators, so should the consecutive steps in flood control and land conservation be fitted together and scheduled. As it is necessary for the architect to coordinate the activities of mason, carpenter, plasterer, electrician, plumber, paper hanger, floor finisher, stair builder, etc., so it is necessary to apply these same principles on a scale of great magnitude to the vast engineering undertaking of water control throughout the nation.

A regional group here, two or three governors with their heads together there, district engineers in conference, a congressman zealously pushing a poorly devised bill, a politician looking for pork, and other scattered sources of ability or knowledge, all active, but under no considered or concerted plan and with no real coordination, cannot make for ultimate success. Their results will resemble a house built without a plan. These different forces must be focused and controlled if we are to accomplish that which is before us.

Professional Engineers know that an extensive program such as Flood Control, to be successful, must be carefully planned, and as carefully carried out in proper, balanced sequence.

The Connecticut Society of Professional Engineers, foreseeing the confusion which would follow the recent floods and realizing the responsibility of the engineer in the matter, unanimously adopted the following resolution at its annual meeting, March 28th.

Connecticut Resolution on Flood Control, March 28, 1936

WHEREAS, the appalling loss of life, health, property and injury to the economic welfare of the nation and its people from the preventable devastation caused by uncontrolled flood conditions throughout the land can repeatedly occur with progressive aggravation under the present condition of our natural water sheds; and

WHEREAS, the magnitude of the present national calamity is principally due to the non-correlated and fragmentary though extensive expansion of civilization and industry, and the growth of the urban population, attended by the denudation of forest land, the filling in and diversion of tributary streams, weak dams, both large and small, the decay of old mill dams that are no longer in use, insecure and low bridges, the lack of dikes at narrow channels, the absence of planned reservoir basins, and so forth; and

WHEREAS, by comprehensive engineering planning covering each drainage area, a proper system of dams, dikes, embankments, control reservoirs, lakes and ponds, ice breakers and deflectors, channels, levees, relief gates and ice destruction, high and safe bridges, reforestation, etc., can be laid down that will not only prevent recurrences of flood calamities, but will cost less than the effects of a single recurrence, and furthermore will produce a collection of most valuable future assets; namely, (1) an augmented water supply now needed by our increasing population; (2) the prevention of the erosion and washing out of millions of tons of irreplacable fertile and fertilized agrarian soil; (3) provision for the propagation of food fish; (4) supply of power at well distributed locations; (5) soil moisture retention for agriculture; (6) healthful recreation sites in waste lands; (7) beautified scenery; (8) control of water pollution; (9) contribution of many contingent benefits for the peoples of our growing civilization; and

WHEREAS, the probable hurried and improperly planned restoration of the devastated area will increase future dangers and waste billions;

THEREFORE, BE IT RESOLVED:

That THE CONNECTICUT SOCIETY OF PROFESSIONAL ENGINEERS does hereby urge and demand (1) that the several state governments and the Federal government combine to set up a UNIFIED ENGINEERING CONTROL for each drainage area, each reporting to a CENTRAL COORDINATING ENGINEERING AUTHORITY; (2) that funds be appropriated by Legislatures and the Congress for surveys extended to all tributary stream sources throughout the entire flood area by corps of qualified engineers; (3) that funds be appropriated by Legislatures and the Congress for the achievement of scientific flood control with attendant conservation planned and executed by fully qualified engineers; (4) that the selection of all executive and assistant engineers on the projects be non-partisan and free from political preferment, and that such selection be made entirely upon the basis of character, engineering ability and reputation.

FURTHERMORE, BE IT RESOLVED:

That every professional engineer in the country, every engineering organization in the land, be urged to use their individual and vast collective power to see that the objects of this RESOLUTION are accomplished; that friendly effort and argument, political pressure and publicity be brought to bear by them for the attainment of this end, thus performing an enlighting service of inestimable value to our country.

AND FURTHERMORE BE IT RESOLVED:

That a copy of this RESOLUTION be sent to the President of the United States of America, to the Governor of Connecticut, to the National Society of Professional Engineers and all other State Societies of Professional Engineers, to the "American Engineer" and to other engineering organizations of the United States of America, to the Associated Press, to the United Press, to the newspapers of Connecticut, to the United States District Engineer and such others as the Executive Committee deems advisable, with a letter from our President urging their non-partisan support and endorsement of this RESOLUTION.

Respectfully Submitted,
Committee on Resolutions.
(Signed) ELMER H. BEARD, *Chairman.*

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ITEMS OF GENERAL INTEREST

REPORTS, NEWS, COMMENTS

STATE ACTIVITIES

Correspondents and readers are invited to submit for publication items of interest to the professional engineer of the country. Such material should be forwarded as quickly as possible in order to keep news up to date.

INGENIEUR A TITLE

European Custom

An illustration of the high regard for the professional designation of Engineers in other countries is revealed in a recent application for Professional Engineer's license in New York State. The candidate records the fact that he graduated from the Imperial Institute of Technology, Division of Electrical Engineering (5-year course), at Vienna, with the degree of E.E. in 1906; and that in 1917, after 11 years of professional experience, he secured legal permission to use the title "Ingenieur" (Engineer) by official authorization of the Imperial Austrian Ministry of Public Works. (In most European countries, the unauthorized use of the professional designation "Ingenieur" is strictly prohibited by law.)

ENGINEERS IN INDUSTRY

Greater Participation Seen as Need

Financial Theories and Practices Cause Depressions

Money Not the Be-All and End-All of Industry

(*Editorial reprinted with permission from The Christian Science Monitor*)

"RIGHT OF WAY FOR ENGINEERS"

Love of money is the root of most depression. Because of the almost universal fetish that money is the be-all and end-all of industry, it has been left to Finance with a big F to pull the world out of the slough of insufficiency. The success has not been conspicuous. Money and industry are two ends of the same stick. The world has held the wrong end —money. It needs to get hold of the right end—industry. How about giving the engineers the right of way, more chance to develop industry for the service it can render?

Speaking on technological research and social progress recently, Charles F. Kettering, president of General Motors Research Corporation, struck a note which is being more and more sounded in widely separated quarters. He said:

We have got to get away from the early development of new industries on the basis of profit and loss; the basis of return on capital. We have got to think of it as the development of something in which faith, in which the rightness of the thing, becomes the important factor.

Development of industry is as important as operation of industry, Mr. Kettering declares.

Government and finance have signally failed to grasp these fundamental facts. Engineers see clearer. The Brookings Institution's investigations disclose that, even in the prosperous years just preceding 1929, almost three quarters of the population of the United States "were

(*Continued on page* 23)

CONNECTICUT

Flood Control Activities Continue to Gain Support

The interest in the Flood Control program has become so widespread as a result of the State Society's activities that President Harris and his aides are overwhelmed with approvals, questions, pleas and other matters pertinent thereto. An appeal for aid has been sent to the National Society.

So outstanding have been the efforts of Engineer Harris, that President Steinman of the N.S.P.E. has requested him to assume the Chairmanship of a national committee.

Following is an announcement which has been issued by the Connecticut Society:

Thousands of copies of the Flood Control resolution have been distributed by mail and by publication, to legislators, governors, engineering organizations, civic bodies, regional planners, etc. THE NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS, THE ILLINOIS SOCIETY OF ENGINEERS, THE KENTUCKY SOCIETY OF PROFESSIONAL ENGINEERS, THE NEW YORK STATE SOCIETY OF PROFESSIONAL ENGINEERS, THE OKLAHOMA SOCIETY OF PROFESSIONAL ENGINEERS and many other groups have endorsed it and adopted similar resolutions.

Letters from President Paul E. Green of the Illinois Society, President B. M. Brigman of the Kentucky Society, President John C. Riedel of the New York State Society, President M. C. Shibley of the Oklahoma Society have been sent to the Connecticut Society endorsing the above resolution.

Other professional engineering groups are falling in line as fast as they hold meetings on the subject. The interest of professional engineers of all classifications has been aroused throughout the country.

It is to be hoped that all Professional Engineering Societies will fully realize the extreme importance of this matter to the nation and to the engineers themselves, and that they will not only adopt similar resolutions but will appoint an active, effective special committee to "follow through".

Endorsements of this endeavor have been received from widely distributed parts of the country, and from many sources, including senators, congressmen, governors, editors, scientists, hydrologists, political and civic bodies, governmental committees, organized agriculture, and the ordinary citizens, many letters have been sent to the committee from many types of individuals and organizations expressing their approval and interest.

(*Continued on page* 21)

OKLAHOMA

Society Amends By-Laws

In keeping with the mutual provisions of affiliation between the National Society and State Bodies the Oklahoma Society has adopted the following amendments to its By-Laws:

Amendment No. 1

Article XIV shall be stricken and the following wording shall be inserted in lieu thereof under the same number and title:

"As of May 1st, 1936, this Society (hereinafter referred to as the Oklahoma Society) shall become affiliated with the National Society of Professional Engineers (hereinafter referred to as the National Society), subject to the following conditions:

1. The Oklahoma Society hereby subscribes to the Constitution and to the By-Laws of the National Society subject to the limitations of the Articles of Incorporation and of the By-Laws of the Oklahoma Society and of the laws of the State of Oklahoma.

2. The Oklahoma Society specifically reserves full autonomy in all matters of State and local concern. While for simplicity it may be considered that certain individual members of the Oklahoma Society will hold membership in the National Society thru the procedure of paying "National dues", it is specifically understood and agreed by the Oklahoma Society and by the National Society that this affiliation is an act of the corporate body known herein as the Oklahoma Society and is not the action of any group of individual members thereof. All relationships of members, Chapters, Districts or other units of the Oklahoma Society with the National Society, except those of members holding office in or serving on committees of the National Society, shall be maintained thru the duly authorized officers of the Oklahoma Society.

3. Membership in the National Society of members of the Oklahoma Society is entirely optional with the individuals concerned except that the Oklahoma Society guarantees to the National Society an income from Oklahoma Society and the members thereof equivalent to twenty-five memberships at the prevailing rate of dues as provided in the Constitution of the National Society. Any member of the Oklahoma Society may secure membership in the National Society on his simple request and the payment of dues for the current year. The Oklahoma Society agrees to invite each of its members to secure national membership at least once each year, to receive all such requests for membership and the national dues of all such members, paying the latter to the Executive Secretary of the National Society as of

(*Continued on page* 18)

WASHINGTON

Engineers to Discuss Airships

The Editor of the American Engineer has received the following communication from the Hon. John M. O'Connell, M.C., from Rhode Island:

"April 24, 1936

"Dear Mr. Sheridan:

An effort is being made to have Congress recognize the ability of American engineers to design and construct airships, to be an improvement of the German Zeppelin. The chief improvement now contemplated is in the type of hull-frame.

The Chairman of the House Naval Affairs Committee, has agreed to conduct a hearing, at which hearing a new frame structure for airships will be presented in the manner outlined on page 12 of the attached pamphlet.

The judgment and influence of American engineers should be helpful in securing some immediate action, extending to American engineers the opportunity of demonstrating their resourcefulness and ability to design, to construct and to equip stronger, safer airships for American commercial and military service.

I would appreciate an expression of your thought concerning this matter. Should you want information of a general or technical character, please address Respess Aeronautical Engineering Corp., 409 Investment Building, Washington, D. C., or Cranston, R. I."

It is interesting to quote from the remarks of Congressman O'Connell delivered on April 14, 1936, the following:

"I have been very much impressed by a brief prepared by Dr. D. B. Steinman, president of the National Society of Professional Engineers, published in the February issue of the American Engineer, as follows:

The engineer—he is the master of the laws of Nature. On a sound foundation of mathematics, science, and economics he bends the materials and forces of Nature to his plan and rears the structure of civilization.

With vision, resourcefulness, and ingenuity, he labors to increase the comfort, wealth, and safety of his fellow men.

He attacks his problems with the vision of the pioneer, the integrity of the scientist, the accuracy of the mathematician, the practicality of the businessman, the resourcefulness of the inventor, and the courage of the conqueror.

He is the planner and builder. He builds his visions into enduring realities.

He is the pathfinder of civilization. He breaks down the barriers, bridges chasms, establishes communication, and straightens the way for commerce and human progress.

He is the protagonist of efficiency. He reduces effort, eliminates waste, and increases production.

He is the creator of a nation's wealth. He drains the swamps, reclaims the deserts, develops resources, and harnesses power. He builds the machinery of industry, the wheels of commerce, and the structure of business.

He is the great coordinator. He plans and directs the construction of projects representing the investment of millions of dollars and involving the labor of thousands of men.

He investigates with open mind and gets the facts before he makes decisions.

(*Continued on page* 18)

TEXAS

Travis Chapter Elects

At the organization meeting of the Travis Chapter of the Texas Society of Professional Engineers, held on April 10th, the following officers were elected:

President, Everett T. Giles, U. S. Reclamation; Vice-President, R. H. Knipping, Supt. Water and Light Plant, city of Austin; Vice-President, E. G. Franke, Res. Engr. Div. 14, State Hwy. Dept.; Executive Secretary, R. H. Guinn, State Highway Department; Financial Secretary-Treasurer, Tate Dalrymple, U. S. G. S. Directors (four): J. P. Exum, State Highway Department; Trigg Twichell, U. S. G. S.; H. M. Bohn, City of Austin; J. H. Burch, State Highway Department, Div. 14.

Constitution and By-Laws for the Travis Chapter of The Texas Society of Professional Engineers.

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PREAMBLE

Travis Chapter subscribes to the aims and purposes as set forth in the Preamble, Constitution, and By-Laws of the Texas Society of Professional Engineers.

In order to aid in advancing these ideals in this District, Travis Chapter accepts a charter from the State Society and herewith sets forth its Constitution and By-Laws of which this Preamble is a part.

ARTICLE I

Name

Section 1. This Chapter shall be known as the Travis Chapter of the Texas Society of Professional Engineers.

ARTICLE II

Headquarters

Section 1. The principal office and the place of meeting shall be located in the City of Austin, Travis County, and shall be selected by the Executive Board.

ARTICLE III

Membership

Section 1. The membership shall be limited to Professional Engineers. Pending the enactment of an engineers' registration law in Texas, Professional Engineers shall be defined as Engineers who are legally registered in another state, or certified by the National Council of State Boards of Engineering Examiners, or certified by the Executive Board of this Chapter as having the qualifications set forth in the uniform registration law sponsored by this society. After the enactment of an engineers' registration law in Texas, the membership shall be limited to Professional Engineers legally registered in the State of Texas. Every member of this Chapter is a member of the Texas Society of Professional Engineers and of the National Society of Professional Engineers.

Section 2. There shall be but one class of membership.

(*Continued on page* 19)

PENNSYLVANIA

Directory of Officers

The Society has just issued a roster of National, State and Chapter officials. It is recommended that engineers of Pennsylvania keep this list for reference:

OFFICERS FOR 1936

National Society of Professional Engineers, 1055 National Press Building, Washington, D. C.

President, D. B. Steinman; 1st Vice-President, T. W. Battin; 2nd Vice-President, Hugh A. Kelly; Secretary, Willard S. Conlon; Treasurer, Perry T. Ford.

Committee Chairmen

Executive, D. B. Steinman; Membership, Perry T. Ford; Legislative, Samuel I. Sacks; Public Relations, Francis J. Sette; Publications, Arthur V. Sheridan; Professional Relations, Victor Gelineau; Chapter Activities, Raphael J. Smyth.

Pennsylvania Society of Professional Engineers, 921 Widener Building, Philadelphia, Pa.

President, Solomon M. Swaab; 1st Vice-President, H. S. Mattimore; 2nd Vice-President, Chester F. Drake; Executive Secretary, T. W. Battin; Financial Secretary, Walter E. Witte; Treasurer, A. A. Townsend. National Director, term ends 1936, Samuel I. Sacks; Directors-at-Large, Ralph Mellor, term ends 1936; C. Edwin Pidcock, term ends 1937; Philip E. Stauffer, term ends 1938. Chapter Directors: Samuel I. Sacks, Philadelphia; Charles A. Finley, Pittsburgh; Philip E. Stauffer, Wilkes Barre; A. Judson Warlow, Harrisburg; William S. Lohr, Lehigh Valley; Charles R. Muhlenberg, Reading.

Philadelphia Chapter, P. S. P. E. (Term will end probably June, 1936)

President, Samuel I. Sacks, term ends 1935; Vice-President, John Edgar Hires, 1936; Secretary, Walter E. Witte, 1935; Treasurer, A. A. Townsend, 1935; State Director, Samuel I. Sacks, 1936; Chapter Directors: Harold C. Rawley, 1935; Robert D. Peter, 1935; George N. Hyland, 1936; Milton H. Blez, 1936; Ralph Mellor, 1937; David C. Finston, 1937.

Pittsburgh Chapter, P. S. P. E., 610 Maloney Building, Pittsburgh, Pa.):

President, Samuel Eckels; Vice-President, Ray S. Quick; Secretary, Benjamin H. Aires; Treasurer, Miles G. Bigley; State Director, Charles A. Finley. Directors: Chester F. Drake, John M. Duff, Daniel E. Davis, Roy Lee Smith, Charles K. Harvey, Alexander Hutchinson.

Wilkes Barre Chapter, P. S. P. E., Jeddo, Luzerne County, Pa.:

President, Philip E. Stauffer; Vice-President, Robert N. Myers; Secretary, A. D. Macfarlane; Treasurer, Frederick Butts; State Director, Philip E. Stauffer.

Harrisburg Chapter, P. S. P. E., 2311 Penn Street, Harrisburg, Pa.:

President, Robert Hall Craig; Vice-President, A. Bowman Snavely; Secretary-Treasurer, John M. Moltz; State Director, A. Judson Warlow. Chapter Directors, one year term, Allen F. Jones, Irvin H. Geiger; two year terms, Raymond G. Bobb, Horace A. Kilmer; three year term, H. S. Mattimore, Ritchie Lawrie, Jr.

Lehigh Valley Chapter, P. S. P. E., 1929 Ferry Street, Easton, Pa.:

President, William S. Lohr; Vice-President, Howard C. Roeder; Secretary-Treasurer, Victor W. Anckaitis; State Director, William S. Lohr. Chapter Directors: James A. Gish, Jr., three year

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OKLAHOMA

(*Continued from page* 16)

the close of the calendar month of their collections.

4. This affiliation is specifically conditional upon the adherence by the National Society to a policy that no resident of Oklahoma who is not a member of the Oklahoma Society, shall be accepted for membership by the National Society.

Amendment No. 2

Article IV shall be amended by the addition of a new Section as follows:

"Section 5. National Directors. One Representative to the National Society of Professional Engineers, to be known as the National Director shall be elected by the Board at the first meeting of each year to serve for a term of one year. The National Director shall represent this Society on the Board of the National Society, endeavoring to promote and carry out the policies laid down by the Board of this Society.

Amendment No. 3

Article V shall be amended by striking the subject matter of Section 3 and by substituting therefor, under the same section number and title, the following wording:

"Members affiliated with the National Society shall pay annually to the Secretary of the Oklahoma Society the national dues as prescribed in the Constitution of the National Society, said payment being in addition to other amounts due this Society as provided herein."

Amendment No. 4

Article VII shall be amended by striking the title of Section 3 and by substituting therefor the words "Committee on Enforcement."

Amendment No. 5

Article VI shall be stricken in entirety and the following new Article shall be inserted in lieu thereof:

"Article VI. District and Chapter Organizations.

Section 1. District Organization.

a. For the purpose of district organization, the State shall be subdivided into ten districts composed of the following listed Counties respectively:

1. Atoka, Bryan, Choctaw, Haskell, Latimer, Leflore, McCurtain, Pittsburg and Pushmataha.

2. Adair, Cherokee, Creek, McIntosh, Muskogee, Okfuskee, Okmulgee, Sequoyah and Wagoner.

3. Craig, Delaware, Mayes, Nowata, Osage, Ottawa, Rogers and Washington.

4. Garfield, Grant, Kay, Kingfisher, Lincoln, Logan, Noble, Pawnee and Payne.

5. Alfalfa, Beaver, Blaine, Cimarron, Dewey, Ellis, Harper, Major, Texas, Woods and Woodward.

6. Beckham, Caddo, Comanche, Cotton, Custer, Greer, Harmon, Jackson, Kiowa, Roger Mills, Tillman and Washita.

7. Carter, Coal, Garvin, Jefferson, Johnston, Love, Marshall, Murray, Pontotoc and Stephens.

8. Canadian, Cleveland, Grady, Hughes, McClain, Pottawatomie and Seminole.

9. Tulsa.

10. Oklahoma.

b. As soon as possible after the first meeting of each year the President shall appoint, with the advice and consent of the Board, a District Committee, in each of the Districts listed, composed of from five to ten members as the size of the District may warrant, and to serve for a term of one year.

c. The District Committee of each District shall arrange for at least two District Meetings per year, shall serve as a Membership Committee within the District, shall promote and assist in the formation of Chapters, shall report violations of the Statute governing registration or of the Code of Ethics to the appropriate standing committees thru the Secretary, shall assist the Committee on Ethics and the Committee on Enforcement in the investigation of complaints of violations, and shall assist in any other way the carrying out of the work of the Society as an administrative group.

d. The Chairman of each District Committee shall be notified of each meeting of the Board and he shall attend each such meeting or arrange for attendance by an alternate member of his Committee. Such members will participate actively in such Board meetings except that only actual Board members may be counted toward a quorum and may vote.

Section 2. Chapters.

a. Chapters may be chartered at the discretion of the Board on written application signed by not less than ten members in good standing. A Chapter shall cover at least one County and shall not include territory in more than one District. At least one of the members signing such application shall reside in each of the Counties involved.

b. Membership in any Chapter shall be confined exclusively to members of this Society maintaining residence or business addresses in the area of said Chapter.

c. Each Chapter shall file a copy of its Constitution and By-Laws with the Secretary of the Society within one year of the granting of its charter for the consideration and approval of the Board. Said Constitution and By-Laws shall provide for the election of a Chairman, Vice-Chairman and Secretary, for the appointment of committees necessary to carry out the work of the Society, and for the holding of at least four meetings per year. Said Constitution and By-Laws shall not provide for the collection of Chapter dues without specific permission of the Board and shall not provide for any activities not fully with the scope of the By-Laws of the Society. Participation of Chapters in partisan political affairs is specifically prohibited and such participation shall constitute grounds for the revocation of any Chapter charter by the Board.

d. Chairmen of Chapters will be notified of and shall participate in Board meetings as prescribed above for District Chairmen.

e. Within the limitations of these By-Laws local autonomy is granted to each Chapter chartered.

Section 3. District and Chapter Relationships. The District is an administrative unit functioning under the Board and the duly elected officers of the Society. It does not have local autonomy. It is intended to coordinate the work of the Chapters and of the members in areas not having Chapters. The District has no authority over Chapters. Complete harmony and cooperation between the Districts and Chapters is an obligation of both organizations.

Amendment No. 6

The By-Laws shall be amended by the insertion immediately after Article XIV a new Article XV, as set forth below, and by renumbering the present Article XV to Article XVI:

"Article XV. Title. The Term 'engineer' shall be adopted as a title of respect and as such shall be applied solely to engineers holding certificates of registration issued by this or other states or territories or by the National Bureau of Engineering Registration. The standard abbreviation to be used in correspondence is 'Engr.'"

WASHINGTON

(*Continued from page* 17)

He plans with thoroughness and builds with fidelity.

To his rich heritage from the labors of past generations of engineers and scientists he adds his contributions. He continues the work of forcing outward the challenging barriers that separate man's efforts from the impossible.

Dr. Steinman is an eminent consulting engineer, in the design and construction of both arch-frame and suspension bridges, and is recognized throughout the world as among the leaders in his profession. He has designed many of the great bridges in North and South America, as well as other sections of the world.

He has knowledge and experience that assures his ability to analyze the Zeppelin arch-bridge type frame, the aero-dynamic and load stresses imposed on an airship in flight, and to design an airship structure with the application of the suspension-bridge engineering principles, for any size airships.

One of our American inventors developed the idea of employing the self-anchored suspension bridge principle in the construction of airships. With the cooperation and advice of the Guggenheim School of Aeronautics, of New York University, following standard procedure, a scale model was made and tested with very satisfactory results. Robinson & Steinman, consulting engineers, were then employed to design a suspension bridge frame for an airship, to be constructed upon specifications prepared by the Bureau of Aeronautics of the Navy Department, for the Akron and Macon.

Upon the completion of this work Messrs. Robinson & Steinman submitted a report in which were the following statements:

Whatever may be said of the performance of the Zeppelin airship will apply equally to the Respess airship, but the Respess airship would have in addition the following advantages:

Greater strength and safety.
Greater inherent strength.
Increased length of life.
Decreased maintenance costs.
More efficient use of material.
Reduction in cost of construction.
Reduction in time of construction.
Ease of construction.

Simplicity, accuracy, and definiteness of calculation.

The stresses in this airship never reverse, thereby removing all fear of failure in the hull through fatigue and crystallization.

The net pay load will be unusually high, facilitating economical commercial operation."

TEXAS

(*Continued from page 17*)

ARTICLE IV

Officers, Directors, and Executive Board

Section 1. The officers of the Chapter shall consist of a President, two Vice-Presidents and Executive Secretary, and a Financial Secretary-Treasurer.

Section 2. There shall be directors to bring the board membership to nine members. There shall be an Executive Board of the Chapter consisting of the officers, the two immediate past presidents and such additional elected directors as may be necessary to complete a board of nine members. The President of the Chapter shall be Chairman of the Executive Board.

Section 3. The officers and Directors, together with the two immediate Past Presidents shall constitute the Executive Board of the Chapter. The President of the Chapter shall be Chairman of the Executive Board.

ARTICLE V

Committees

Section 1. There shall be four standing committees: namely, Law and Ethics, Membership, Public Relations, and Chapter Activities.

Section 2. The standing committees shall consist of not less then three members.

Section 3. The Chairman and the members of standing committees shall be appointed by the President for a period of one year or until discharged, and shall be designated within one month after the election of the President.

Section 4. A Nominating Committee of five members shall, at the October meeting, be nominated and elected from the Floor. No Officer or Director shall be eligible for membership on this committee.

Section 5. An Audit Committee of three members shall, each year, be appointed by the President during the month of January.

Section 6. Special Committees shall be appointed by the President as required.

ARTICLE VI

Code of Practice

Section 1. The Code of Practice adopted by the Chapter shall be considered as a part of this Constitution and any amendments to it shall follow the same procedure as provided in Article VIII for Amendments to this Constitution.

ARTICLE VII

Election of Officers and Directors

Section 1. All Officers shall be elected annually and shall hold office for one year or until their successors are chosen.

Section 2. All elections shall be by letter ballot. Ballots shall be mailed at least two weeks prior to the date of the meeting at which the elections are to be held.

Section 3. A plurality of all votes cast by ballot shall be necessary to elect to any office.

Section 4. Upon the death, resignation, or removal of any Officer or Director, the Executive Board may fill the vacancy until the next annual election.

Section 5. No member shall be elected to the same office for two successive years.

ARTICLE VIII

Amendments

Section 1. This Constitution may be amended by a letter ballot provided, however, that such amendment shall have been presented previously at two meetings of the Chapter and shall have each time attained a majority approval.

Section 2. Letter Ballots shall be accepted for two weeks following the date of mailing to the membership. A two-thirds affirmative vote, with not less than twenty-five percent of the membership voting, shall be required to amend this Constitution or any part thereof.

Section 3. Amendments to this Constitution shall become effective immediately upon approval as provided in Sections 1 and 2 of this Article.

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By-Laws

ARTICLE I

Fiscal Year

Section 1. The Fiscal Year of the Chapter shall be from January first to December thirty-first.

ARTICLE II

Meetings

Section 1. *Regular Meetings.* The Chapter shall regularly convene monthly, except during the summer season, on a day selected by the Executive Board. Notices of each meeting shall be mailed one week in advance thereof.

Section 2. *Special Meetings.* Special Meetings shall be called by the President upon his own volition, upon request by the Executive Board, or upon the written request of ten members of the Chapter. The purpose of such meeting shall be set forth in the notice to members and no business, other than that for which the meeting was called, shall be transacted.

Section 3. *Annual Meeting.* The meeting held in December of each year shall be designated as the Annual Meeting.

Section 4. *Quorum.* For the purpose of transacting business of the Chapter, a quorum of twenty-five percent of the membership, but not less than fifteen members shall be required.

Section 5. *Order of Business.* The order of business for regular meetings shall be:

1. Reading of Minutes of Previous Meeting.
2. Reading of Communications.
3. Reports of Officers.
4. Reports of Committees.
5. Unfinished Business.
6. New Business.
7. Good and Welfare Discussions.
8. Adjournment.

The order of business for the Annual Meeting shall be:

1. Roll call of Officers and Directors.
2. Reading of Minutes of Previous Meeting.
3. Reading of Communications.
4. Reports of Officers.
5. Reports of Committees.
6. Unfinished Business.
7. New Business.
8. Election of Officers and Directors.
9. Installation of Officers.
10. Adjournment.

ARTICLE III

Officers

Section 1. *President.* It shall be the duty of the President to preside at all meetings of the Chapter and of the Executive Board; he shall be, ex officio, a member of all committees, and shall appoint chairmen and members thereof except as otherwise provided. He shall countersign all checks, orders, and drafts. He shall, subject to the approval of the Executive Board, have general direction of the business of the Chapter.

Section 2. *Vice-Presidents.* In the absence of, or in case of the inability of the President to act, it shall be the duty of one of the Vice-Presidents, in order of precedence, to perform all the duties of the President. In the absence of all three from a meeting, the chairman for that meeting shall be elected from the floor.

Section 3. *Executive Secretary.* The Executive Secretary shall keep an accurate record of all proceedings of the Chapter and have custody of all official papers and records, except those properly in the custody of the Financial Secretary-Treasurer or as set forth in succeeding sections. He shall issue all calls and notices ordered by the President or Executive Board. He shall have such other duties and prerogatives as the Executive Board may assign to him. At the Annual meeting he shall submit a written report covering the duties and activities of his office, including a statement of the membership of the Chapter. He shall receive such salary as the Executive Board shall determine, subject to the approval of the general body. At the expiration of his term of office, he shall turn over to his successor all books, documents and other property of the Chapter in his custody, receiving a receipt therefor.

Section 4. *Financial Secretary-Treasurer.* It shall be the duty of the Financial Secretary-Treasurer to receive and to have custody of all monies of the Chapter, to keep an accurate record thereof, to make all disbursements and sign all vouchers, drafts and checks which have been approved by the Executive Board. He shall render all bills for dues and shall submit a report at each meeting, of the monies received since the previous report. He shall be bonded to an amount determined by the Executive Board. The fee for his bond shall be paid out of the funds of the Chapter. At the expiration of his term of office, he shall turn over to his successor all books, records, and money in his custody, and receive a receipt therefor.

ARTICLE IV

Executive Board

Section 1. The Executive Board shall have general supervision of all matters pertaining to the Chapter. The Board shall make rules of procedure to be used in investigations, hearings, or trials relevant to unprofessional acts. Whenever an emergency, demanding immediate ac-

tion, arises between regular meetings, it shall have the power to act for the Chapter. It shall attend to all matters the transaction of which usually devolves upon a body of this kind. It shall see that all books are properly audited at least once a year. Its meetings shall be at the call of the President or upon the written request of three of its members; and five members shall constitute a quorum. Its action or proposed action shall be subject to approval by the Chapter; a two-thirds vote of the members assembled shall be necessary to overrule any action by the Executive Board.

ARTICLE V

Committees

Section 1. *Law and Ethics.* The Law and Ethics Committee shall report on all matters relative to legislation and law enforcement affecting the profession. It shall formulate a Code of Practice for the guidance of the profession in the District, and shall make recommendations as to the enforcement of this Code to the Executive Board. It shall act as the Chapter's investigating committee on matters of professional conduct, malpractice, and of grievance.

Section 2. *Membership.* The membership Committee shall investigate and report on all applications for membership. It shall at all times seek to expand the membership of the Chapter.

Section 3. *Public Relations.* The Public Relations Committee shall serve as a contact committee between the Chapter and the general public, the press and other groups. Matters arising outside of the Chapter requiring committee study shall be referred to it.

Section 4. *Chapter Activities.* The Chapter Activities Committee shall plan and execute activities which shall redound to the benefit of the Chapter and the District.

Section 5. *Nominating Committee.* This Committee shall elect its own chairman and shall have its report in the hands of the Executive Secretary three weeks prior to the day on which the Annual Meeting is to be held. Nominations, other than those of the Committee, shall be in order at all times, and if supported by a written request of not less than ten members, shall be printed on the official ballot.

Section 6. *Audit Committee.* This Committee shall report at the March Meeting on the condition of the books and records, of the Executive Secretary, and of the Financial Secretary-Treasurer. The period covered by this report shall be the previous fiscal year.

Section 7. *Special Committees.* These committees shall meet at the earliest possible date after appointment, study their special assignment thoroughly, and report promptly.

ARTICLE VI

Election of Members

Section 1. Applicants for membership in the Chapter may be elected by the Chapter upon recommendation of the Membership Committee after their investigation.

Section 2. In the event that an applicant fails of unanimous election, his application shall be resubmitted to the Membership Committee. If again favorably reported upon, a two-thirds favorable vote by the Chapter shall elect.

Section 3. A member may be censured, suspended, or expelled, for cause, upon the recommendation of the Law and Ethics Committee, by an unanimous vote of the Executive Board. In the case of expulsion, however, action shall be taken only after review as provided in: Article V, Section 1 of the By-Laws of the State Society; and in Article V, Section 7 of the Constitution of the State Society.

ARTICLE VII

Dues

Section 1. The dues collected by the Chapter shall be ten dollars per annum, due and payable at the beginning of the fiscal year. Members elected or reinstated during the fiscal year shall pay proportionate dues referred to the previous quarter year.

Section 2. A member who on December thirty-first has not paid his dues shall be dropped from the Society by the Executive Board.

Section 3. Members who have been dropped for non-payment of dues, shall not be reinstated until the one year dues in arrears have been paid.

Section 4. The annual dues of ten dollars will be credited to the member in the following manner:

a. Three dollars as Chapter Dues.

b. Three dollars as State Society Dues.

c. Three dollars as National Society Dues.

d. One dollar as magazine subscriptions.

ARTICLE VIII

Obligations

Section 1. No obligations, except incidental expenses, shall be incurred and no continuing obligations entered into without a two-thirds approving vote at a meeting of the Chapter or of the Executive Board.

Section 2. The payment of all obligations shall be approved by the Executive Board, and all checks and vouchers shall be signed jointly by the President and the Financial Secretary-Treasurer.

ARTICLE IX

Amendments

Section 1. These By-Laws may be amended at any meeting of the Chapter provided official notice of the proposed amendment shall have been mailed to each member of the Chapter, by the Executive Secretary, with a notice of the meeting at least one week in advance thereof. A two-thirds favorable majority of those assembled shall be necessary to amend.

Section 2. A particular section of these By-Laws may be suspended by unanimous consent of the members present at any meeting for a single stated purpose.

Section 3. Any amendment to these By-Laws, upon complying with Section 1 of this Article, shall become effective immediately.

PENNSYLVANIA

(*Continued from page* 17)

term; George E. Yundt, two year term; H. L. Ramage, one year term.

Reading Chapter, P. S. P. E., 101 Endlich Avenue, Mt. Penn, Reading, Pa.:

President, Frederck H. Dechant; Earle M. Frankhouser, Vice-president, (Berks Co.); Secretary, LeRoy F. Christman; Treasurer, William B. Ahrens; State Director, Chas. R. Muhlenberg. Chapter Directors: James E. Mast, Alexander W. Luck, three year term; E. M. Gilbert, William J. Senner, two year term; W. Clinton Fry, Jr., George H. Schaeffer, one year term.

Send any additions or corrections to

T. W. BATTIN, *Exec. Secretary,*
921 Widener Building, Philadelphia, Pa.

Secretary Addresses Educators

The following public appeal has been issued to engineering teachers throughout Pennsylvania:

To The Engineering Educators of Pennsylvania:

A recent survey shows that of 450 engineering educators in the dozen or more institutions of learning in Pennsylvania in which engineering instruction is given, who from their titles and evident preparation should be eligible for registration as Professional Engineers, only 50, or about one ninth, have so registered.

This communication is addressed to such educators to urge them to register, when eligible, as a matter of professional duty and when so registered, to associate themselves with the Pennsylvania Society of Professional Engineers and thereby, the National Society of Professional Engineers established to do for the Engineering Profession what the Bar and Medical Associations have done for their respective Professions in enhancing prestige, legal protection and professional recognition.

Among the engineering educators already interested in this movement are:

Dean E. Hausmann, Brooklyn Polytech.; Prof. W. J. Krefeld, Columbia; Dean P. H. Daggett, Rutgers; Prof. H. E. Babbitt, Illinois; Prof. C. C. Mota, Puerto Rico; Prof. W. B. Wendt, Louisville; Prof. F. E. Johnson, Iowa; Prof. J. C. Riedel, New York; Prof. C. C. Knipmeyer, Rose Polytech.; Prof. E. M. Fernald, Lafayette; Engr. Chester F. Drake, Pittsburgh; Prof. Ralph H. McKee, Columbia; Prof. L. W. Clark, Rensselaer; Prof. L. S. LeTeller, Charlestown; Prof. D. M. McGain, Mississippi; Prof. J. S. Dodds, Iowa; Dean B. M. Brigman, Louisville; Prof. E. W. Saunders, Virginia; Prof. L. F. Van Hagan, Wisconsin; Prof. C. L. Mann, North Carolina; Prof. William S. Lohr, Lafayette, and others.

The engineering educators of the State, guiding the minds of the younger engineers, should be leaders in this movement and by active participation in the work of our association set an example to the coming generation and do their share toward the uplift of the profession in its human and professional aspects as well as in its technical advancement in which as a class they are generally interested.

F. W. BATTIN, *Exec. Secretary.*

PITTSBURGH

Membership Appeal
By
D. W. BLAKESLEE

Join the Pittsburgh Chapter, Pennsylvania Society of Professional Engineers to cooperate with your fellows.

The organization to:

(1) Build the National Society of Professional Engineers to a status of importance comparable to that of the

American Institute of Architects and the National Medical Association.

(2) Give the public a criterion for procurement of properly qualified engineering personnel.

(3) Establish and observe high standards of engineering ethics and practice.

(4) Enforce engineering laws and practice acts.

(5) Place all engineering work under such laws and acts.

(6) Publicize the requirements, functions, accomplishments and the standing of the engineering profession.

(7) Obtain recognition and remuneration commensurate with the service and responsibility for all persons engaged in engineering.

(Signed) D. W. BLAKESLEE,
(Major D. W. Blakeslee, E. E.)
April 17, 1936.

QUEBEC

Seventeenth Annual Meeting Corporation of Professional Engineers.

The Corporation of Professional Engineers of Quebec held its seventeenth annual meeting in Montreal, at the headquarters of the Engineering Institute of Canada, on Wednesday, March 25th, 1936, under the presidency of Dr. A. R. Decary, M.E.I.C., of Quebec.

The meeting brought a large attendance of engineers from all parts of the Province of Quebec. The reports of council and of the various committees show a great deal of activity within the Corporation. Thirteen cases of illegal practice of the engineering profession were reported to the Corporation and acted upon. At the Quebec Legislature the council of the Corporation has carefully followed the legislation and succeeded in preventing the adoption of a number of laws that might be detrimental to the interest of the profession.

The report of the Committee on Code of Ethics contained several proposed changes and additions to the present code, which will be submitted to the membership at large, by letter ballot, for approval.

A lively discussion took place regarding the misuse of the term "engineer" in the daily newspapers of the Province when referring to machinists or mechanics, and it was suggested that the editors be circularized calling their attention to the fact that only the members of the Corporation have the right by law to take the title of "engineer" in the Province of Quebec.

The much debated question of consolidation of the engineering profession in the Dominion was again discussed, and it was proposed that the meeting request the council to continue its efforts towards consolidation following the lines of the report adopted at the annual meeting of the Corporation in 1935, and that the council not agree to the setting up of any council or committee representing all the professional associations of the Dominion other than as a temporary organization to facilitate consolidation of the engineering profession in Canada.

Immediately after the meeting the council met and elected the following officers: President, Dr. A. R. Decary, M.E.I.C.; Vice-President, Mr. J. M. Robertson, M.E.I.C.; Honorary Secretary-Treasurer, Mr. S. F. Rutherford, A.M.E.I.C. The other members of the council are: Dr. O. O. Lefebvre, M.E.I.C., Col. C. N. Monsarrat, M.E.I.C., and Messrs. A. B. Normandin, M.E.I.C., Hector Cimon, M.E.I.C., and Jas. A. Kearns, A.M.E.I.C.

CONNECTICUT

(*Continued from page* 16)

The endeavor is still in its early stages and is expanding through the efforts of the Professional Engineering Societies in the different States.

The Connecticut Society strongly urges a united front on the part of all professional engineering societies in the other states for the comprehensive planning of all phases of terrestrial hydrology, in each project of water control in the different drainage areas, the placing in cooperation of all forces and skills employed under a unified engineering Administration for each drainage area, and the coordination of all projects, plans, forces and activities under a Central Coordinating Engineering Authority.

To do this may require something entirely new in interstate compacts and federal cooperation, but political barriers, state boundaries, partisan politics, privilege, appointments for political reasons, and other forces disruptive of clear, clean engineering planning and efficient execution must be swept aside or subordinated if the professional engineers are to do a good job of literally saving the country.

From the vast amount of miscellany on the subject that has been studied, the important elements of main channel works, and huge storage reservoirs seem to have been allowed to outshadow these elements so vital to the future life of the country.

It is the concensus of engineering opinion (and who but trained engineers can successfully attack and master these problems) that it is not practicable nor desirable to consider a single element alone in drainage basin planning, whether that single element be flood control, navigation, stream pollution, water supply, hydraulic power conservation or arable soils, reforestation, erosion or anything else.

Such opinion, supported by such outstanding engineers as Saville, Barrows, Cooke, Liddell, many other eminent hydrologists and professional Engineering Societies, is that drainage basins must be developed from an integrated basis considering all aspects of water use and control from precipitation to the final tide water discharge; that it would be obviously illogical to consider flood control as a separate project within an area, as such other projects or conditions as mentioned above might be very seriously affected by such exclusive action; and that each drainage area with its watersheds, and watercourses must be considered as a unit, regardless of state lines or political divisions, in one complete engineering development extending from the mountain rills and springs, through the forests and farms, hills and valleys, towns and cities to the mouth of each main river, and giving engineering consideration to each phase of the terrestrial hydrology.

In brief, political divisions must conform to engineering administration and requirements or be set aside or made subservient to the carrying out of the engineering project as a whole. Then each function of the project and all its geographical parts may be successfully coordinated. The success of the complete project is dependent upon such co-ordination. This is considered as the axiomatic basis from which any plan should start.

PRESS APPROVAL OF NATIONAL SOCIETY PROGRAM TO RESTRICT USE OF TITLE

Editorial From Bridgeport (Conn.) Telegram May 1, 1936

Engineers and Enginemen

A New York movie critic the other day spoke of "aircraftsmen," when what he meant was airmen. "Aircraftsman" is a cumbersome and unnecessary word, borrowed from the British. It is hard to pronounce and the middle syllable adds nothing to the rest. "Airmen" is much better and will prevail over its pretentious rival.

But this country does need a substitute for "engineer," meaning the man who operates an engine. Heaven only knows we do not want any such word as engineeraftsman, but we might borrow "engine driver" from the British. The point is that "engineer" as used in this country has two wholly different meanings. One meaning applies to the man who operates the throttle of a locomotive, or of a marine or stationary engine. The other meaning applies to a technical specialist, practicing a profession.

The National Society of Professional Engineers at Washington, D. C., is sponsoring a campaign to clarify the word by confining it to qualified, professional engineers. In thirty-five states the use of the title is restricted to those who have qualified by technical training and been accepted by state examining boards. The society suggests "engineman" rather than "engineer" for the operator of an engine.

The right of priority is advanced to support the claim of the technical men. They point out that "engineer" had a restricted application to the designers, planners or constructors of military, civil or mechanical works, for four centuries before the steam engine was invented. The word engineer as applied to the operator (rather than the designer) of a steam locomotive has a standing of about one century. But it is pretty well established in practice and will be hard to shake. The Brotherhood of Railway Engineers will not give up their time-honored title without a fight. Perhaps the electrical, mechanical, and civil engineers may be forced to take a leaf from the book of the real estate men and coin a word of their own, as "realtor" was coined.

ORGANIZATION OR DISORGANIZATION

An Interesting Plea for Effectiveness

Mining and Metallurgy for March Contains Suggestions Already in Practice by The National Society of Professional Engineers

No stronger plea for the need of and justification for the National Society of Professional Engineers has been made by its most ardent advocate than is to be found in the March issue of Mining and Metallurgy, the official publication of the A. I. M. E. One wonders that Mining and Metallurgy presents such a strong brief seemingly in support of the philos-

ophy upon which the National Society is predicated.

From Mining and Metallurgy, March, 1936.

"Frequently, the anomaly is pointed out of the chaotic organization (or disorganization) of a profession that consists of men distinguished for their ability to analyze, plan, and coordinate—namely, that of the professional engineer. Last month in Washington, representatives of some forty national, state, regional and local societies of engineers, meeting under the auspices of the American Engineering Council, mutually deplored the state of affairs. A multiplicity of societies, institutes, and clubs are doing, or trying to do, much the same thing for their engineer members. The result is duplication, overlapping, and confusion. Probably matters could be improved by eliminating some of the organizations; surely they could be improved by a logical division of major functions, so that organizations of each type would serve their members effectively in one sphere and abandon efforts to serve them in others.

"It is generally agreed that there are two major functions for engineering societies: (1) dealing with technical and professional matters; and (2) dealing with public affairs and politics, so far as engineers are interested as part of a professional group rather than as individuals.

* * *

"Technical societies have no business in the second field, primarily because the questions involved are always controversial and it is hurtful to create dissension in the ranks over matters essentially foreign to the major purpose of the society. On the other hand, engineers generally have been too inarticulate in respect to public affairs, and it is fitting that they should have appropriate organizations through which to participate collectively in such affairs. The organizations on the right-hand side of the chart are properly constituted to exercise this function. One other important function that local engineering societies may well perform is to act as a clearing or coordinating agency for the activities of the local sections of the national societies that operate in their locality. For example, they would see to it that conflicting technical meetings were not held on the same evening; and they could arrange for joint meetings of the local sections of two or three or even of a dozen national organizations. By such an arrangement all of the technical, economic, and professional matters of interest to engineers could be dealt with adequately, and yet the local society could be relieved of any responsibility for holding meetings of its own on such subjects. They would act in city or state just as does the American Engineering Council in Washington, D. C.

"To all intents and purposes the individuals that constitute the membership of any local or state engineering society also are members of national professional societies and of the local sections of such societies. For that reason there is no functional reason for having the national professional societies, as such, represented on American Engineering Council. In fact, the Council as "the ambassador" of the engineering profession in Washington would be much more responsive if its membership were confined to direct representatives of state and local groups. On the other hand, the object of the Engineers' Council for Professional Development—the enhancement of the professional status of the engineer—seems, logically, to put it under the direct wing of national societies as indicated on the chart.

"It is realized fully that the reshaping of the existing picture to agree with the pattern of the suggested scheme would be a slow process, at best. Nevertheless, the idea seems worth study by those that would like to see a more effective organization of the engineering societies."

ENGINEERS AND ORGANIZATION

Commentary on Forms and Methods
A Brief in Behalf of Democracy

By
D. W. Blakeslee

Professional Engineers are starting the building of an organization of human individuals. Engineers use science, instead of philosophy; employ theory based upon past experience and forms previously developed and used with some success; avoid those things which have produced undesirable results; extend trends into the near future, considering all available factors; maintain the highest known ideals and aim at the greatest good to the majority.

As to the residence of the power or authority in human organizations, there are two diametrically opposed theories. These are exemplified by (1) absolute dictatorship and by (2) ideal democracy. Most organizations are somewhere between these two limits.

Under dictatorship the authority resides in the highest officer. He grants a certain amount of control to officers next in command, who in turn delegate a less amount to lesser officers, and so on down the line until there is reached the great majority which has no authority.

Under democracy the power of authority resides in the majority. It delegates a certain amount of authority to officers who are selected to serve the majority. In an organization of great size the democracy may take the so-called republican form. The smaller sub-divisions of the democratic government elect delegates to represent them in a legislature or convention which formulates laws and nominates executive officers. Those elected direct from the sub-division, may in turn elect delegates to meet with other such delegates from other sub-divisions and so form a representative governing body for the whole.

The democratic idea is the highest ideal of government ever produced by man. It has never been fully realized, but as more people are able to understand the idea and as they outgrow the inferiority complex (which causes them to welcome the dictatorship of those inflated with their own assumed superiority and strength) the more nearly we approach democracy.

Progress toward the democratic ideal has seemed too slow to many (to some the approaching of the ideal impossible), but if we realize the very, very short span of time, in the history of human government, since the democratic idea started to grow we know wonderful strides have been made, and are still being made, toward the ideal.

One factor which has prevented the more rapid development toward the democratic ideal is that the elected official frequently fails to realize he has been made a servant of the people and instead feels that the authority has been given him so that he may inflict his rule.

To permit still more rapid advance toward government by the majority, forms of democracy must advance. Valuable adjuncts, which have been in use in some organizations for a quarter of a century are the initiative, referendum and recall. Another which has been in use to some extent is the right of an individual to appeal to authority nearer the source of democratic power, instead of to "higher" authority (further from the popular rule).

There is a tendency to retain some old customs which now defeat the purpose for which they were once intended. A supreme commander was best served when he appointed directly or indirectly those who imposed his government upon the majority subjugated to his will. Therefore those administrative, judicial and legislative officers directly appointed were in "high" authority. They then selected other officers to serve in subdivisions of the organization. When one of the majority was permitted to make an appeal from the act of an officer it was to an officer nearer the dictatorship. Thus a rule was enabled to perpetuate itself.

Under the new ideal of government the rule is from "below" instead of from "above," using those terms as inherited from the old form of government. Therefore, the administrative, judicial and legislative officers are elected by the majority either directly or indirectly, in the latter case the delegated body making such selection may be overruled by such majority. When an appeal is made from the act of an officer, who is a servant of the majority, it is made to such majority. With an organization of any size it would be unreasonable to take appeals (except those of the very greatest importance) direct to the individuals constituting such majority, so the appeal is made to a body elected by such majority to which such officer is directly responsible.

In a democratic organization all possible safeguards are taken to prevent abuse of power delegated to officers; they are not permitted to select the judicial, auditing, or referendum bodies which might assist in the elected officers retaining perpetual power and so permit a change from democracy to dictatorship. The more nearly possible it is made for the majority to have direct rule, or to correct any misrule of its servants, the more successful and lasting will be that form of organization.

NEW YORK

Annual Convention

The New York State Society of Professional Engineers held its Annual Convention at the Hotel Commodore in the City of New York on Saturday, May 23rd.

The Convention was held in conjunction with an exhibit of rendered drawings and models of outstanding recent engineering accomplishments and proposals.

The meeting which was one of the most successful that the Society has ever held, was unusually well attended and was addressed by Mr. Victor Ridder, Administrator of the Works Progress Administration for the City of New York, Mr. H. H.

Bennett, Chief United States Department of Agriculture Soil Conservation Service, Washington, D. C., and other officials and prominent persons.

A detailed account of the Convention will appear in the June issue.

License Applications; Licensees

The New York State Board of Examiners for Professional Engineers has before it over three thousand applications, filed before April first in order to be eligible for the June examinations. It will probably be humanly impossible for the Board, working under pressure, to handle this unprecedented volume of applications in two months, and many of these may have to be held over for assignment to the following examinations in January, 1937.

Most of the new applications are from men occupying engineering positions in industry and research.

In order to qualify for the January, 1937, examinations, applications must be received before November first.

The final dead-line date for the filing of applications under the present examination requirements is January 1, 1937. All applications received after that date will be considered under the new rules authorized by the Registration Law, with more exacting educational, experience and examination requirements. Graduates from approved colleges of engineering, as well as others, will be required to take the full prescribed written examinations (two days) without any partial exemptions. Candidates who are not graduates of approved engineering schools will have to show twelve years of satisfactory engineering experience before admission to the same written examinations.

New York State now has 10,000 registered professional engineers in good standing, and 3,750 registered land surveyors, making a total of 11,079 after deducting duplications. Since the enactment of the Registration Law in 1920, the State Board has licensed 13,100 professional engineers and 4,900 land surveyors, or a total of 14,500 after deducting 3,500 men licensed to practice both. In fifteen years the total loss (by mortality, retirement, dropping out of engineering, removal from the State, or neglect of renewal) has been only 24 percent. The past records of the New York State Board show that only about sixty per cent of the applications have been successful.

A Tribute by the State Licensing Board to the Late Albert H. Hooker, Former Chairman.

The following minute is recorded as the unanimous sentiment of the New York State Board of Examiners of Professional Engineers and Land Surveyors at its meeting in Albany on April 17, 1936:

It is with a deep sense of personal loss that we record the passing of our esteemed friend and colleague, Albert H. Hooker, member and former Chairman of this Board.

Recognized for his leadership in the field of chemical engineering and for his technical direction of an enterprise of large scope, he gained wide appreciation for his contribution to the advancement of the engineer. Continuously since the enactment of legislation for the licensing of engineers, he served loyally his State and his profession, giving wisely of his counsel and generously of his human understanding.

We were privileged to have his guidance and leadership and we shall miss his kindly and inspiring presence from our councils.

Fees on Federal Aid Projects

The State Society at its mid-winter meeting at Albany, on March 7th, adopted a resolution urging the Public Works Administration to reconsider the schedule of maximum fees promulgated on February 20th, for architectural and engineering services on Federal Aid projects, on the ground that they would discourage competent engineers and architects, and invite unfair competition.

This resolution was forwarded to Hon. Harold L. Ickes, Federal Emergency Administration of Public Works. Following are excerpts from a reply transmitted by Hon. Horatio B. Hackett, Assistant Federal Administrator, to Engr. John C. Riedel, President of the New York State Society: "We . . . are now preparing detailed instructions to all State Directors which will authorize the State Director, Mr. Arthur S. Tuttle, to approve engineering fees in excess of 7 percent in those cases where the State Director is convinced that a higher fee is essential for the procuring of complete and satisfactory professional advice by the client."

RICHMOND COUNTY

The Seventh Annual Meeting of the Richmond County Chapter was held on April 24th, 1936, at the Meurot Club, Staten Island. It was held in the form of a dinner-dance which was attended by nearly 100 persons prominent in the political, professional and social life of Richmond Borough. Mr. Fred. H. Zurmuhlen, President of the Richmond County Chapter, presided. Hon. Joseph A. Palma, President of the Borough, and Mr. George Allison, Commissioner of Public Works and Mr. Herman W. Ordeman, Consulting Engineer of the Borough President's office, were guests of honor.

ERIE COUNTY

At a meeting held in the auditorium of Canisius College, on March 26th, the following officers of the Erie County Chapter were elected for the year 1936-37: President Harvey A. Stetley; Vice-President, Arthur J. Beckwith; Treasurer, Arthur B. Weaver; Secretary, Elias H. Anderson, all of Buffalo.

The Rev. John P. Delaney, S.J., Director of Canisius College Observatory, delivered an illustrated lecture on "Earthquakes and Seismographs."

ORANGE COUNTY

The following officers of Orange County Chapter have been elected to serve for the year 1936-1937: President, Henry L. Felch, Middletown; Vice-President, William Blake, Newburgh; Secretary, Frederick Conrad, Port Jervis; Treasurer, Ferris R. Quackenbush, Florida.

WESTCHESTER COUNTY

The Westchester County Chapter held its monthly meeting on May 6th, in the old Supervisor's Chambers, Court House, White Plains. An illustrated talk on "Boulder Dam" was presented by the Babcock & Wilson Co.; Mr. Gilbert B. Passavant, under the direction of Mr. A. R. Mackay, discussed the subject of the presentation.

BRONX COUNTY

Engineer Raymond J. Van Wagner, President of the Bronx County Chapter, and Engineer George C. Diehl will make a study of the proposed charter of the City of New York and will represent the Chapter at hearings where the charter is discussed.

The following members have been named to serve on the committee appointed to study and report on the East River Crossing between the counties of Queens and The Bronx: George C. Diehl, Chairman; Harrison Blankstein, J. Lawrence Raimist, Isaac Stander, Edward Fitzpatrick.

ENGINEERS IN INDUSTRY

(*Continued from page* 16)

without, and were therefore potential buyers of, luxuries and conveniences." Very pertinently, the institution asks: "Why is 20 per cent of the productive capacity of the country habitually unemployed?"

Technological research is a phrase that scares people. Too often they regard it as chieny a means to displace men with machines. One arguing on this ground will cite some particular factory where the installation of new machinery has thrown former workers on relief. It is the old story of not seeing the forest for the trees. In the larger view, technological research should promote new industries, create new jobs.

It is certainly right that the millions at present existing on an admittedly subnormal scale should be given an opportunity to rise to a normal scale of living. But with approximately $40,000,000,000 lying around unused in the banks of America, finance halts incipient enterprise because its first question always is, "Will it Pay?" And government jams on the brakes by artificial lowering of production on the ground of nonabsorption by consumers.

Everyone knows that in many areas of industry too large a share of the results of technological research and development has been passed to profits instead of to consumers. Obviously, any industry must show a profit if it is to continue; but the basis on which it is founded should be service. Why? Simply because if service is sought first, then profits will be added to it. Is that practical economics? The world's largest and most successful individual industrialist has put it to proof. As a fundamental of his success, Henry Ford has gone on record:

A commodity must first of all be designed to fit the needs of the largest possible number of consumers both in quality and price and the number of consumers will be continuously increased by constantly lowering the price of the article.

The Detroit machinist working on a two-lunger thirty-odd years ago didn't paralyze his initiative by fearfully asking: "Will it pay?"

Here was the engineering viewpoint, planning primarily for service and sensing that the keystone in the arch of greater goods consumption—in fact, in the functioning of our economic system—is progressive price reductions. Government and finance have both tried underproduction as a cure for underconsumption. It has been found wanting. Engineers look less at money, more at the

service industry can render, the actual wealth it can produce. Their viewpoint should have a larger voice in industry.

THE ENGINEER

By Beatrice Holman

(With Acknowledgments to the Christian Science Monitor)

His eye spans each unconquered stream, each bay
With bridges arching constant to the sky,
Or highways that may link too distant shores.
He knows the tested substances and shapes
That best withstand the elements and years;
How much material will make a bridge,
How many girders, rivets, cables, men—
How many days and nights before the span
Will bear its moving stream of cars that gleam
And trucks of food and tanks of fuel oil
Along the arch that bends from soil to soil.
With giant strides across divided land,
From bridge to bridge this builder goes his way
To plot new curves and bridle other streams,
To swing new arcs, new bows against the sky.
Here is accomplishment—to think and dream
And plan—and then erect above the sea
Or some broad-flowing arm a sturdy span,
An ornament and benefit to man.

REGISTRATION FOR CAPITAL

(Continued from April issue)

Reciprocity

Section 19. The Board shall, upon application therefor and the payment of a fee of $10, issue a certificate of registration as professional engineer to any qualified person who holds an unexpired certificate of registration or qualification issued to him by proper authority of the National Council of State Boards of Engineering Examiners, or of the National Bureau of Engineering Registration, or by any State or Territory or possession of the United States, or any country: *Provided*, That the Board shall, by direct correspondence with the Board with which the applicant is registered, obtain certification that the applicant is in good standing at the time he applies for registration: *And provided further*, That the requirements for the registration of professional engineers under which said certificate of registration or qualification was issued do not contravene the provisions of this Act and are of a standard not lower than that specified in section 12 of this Act. Agreement for reciprocity with other States, Territories, possessions, or countries may be entered into by the Board at its discretion.

Revocations and Reissuances of Certificates

Section 20. The Board shall have the power to revoke the certificate of registration of any registrant who is found guilty of—

(a) The practice of any fraud or deceit in obtaining a certificate of registration.

(b) Any gross negligence, incompetency, or misconduct in the practice of professional engineering as a registered professional engineer.

Any person may prefer charges of fraud, deceit, gross negligence, incompetency, or misconduct against any registrant. Such charges shall be in writing, shall be sworn to by the person making them, and shall be filed with the secretary of the Board.

All charges, unless dismissed by the Board as unfounded or trivial, shall be heard by the Board within three months after the date on which they shall have been preferred.

The time and place for said hearing shall be fixed by the Board, and a copy of the charges, together with a notice of the time and place of hearing, shall be personally served on or mailed to the last-known address of such registrant at least thirty days before the date fixed for the hearing. At any hearing, the accused registrant shall have the right to appear personally and by counsel, to cross-examine witnesses appearing against him, and to produce evidence and witnesses in his own defense.

If, after such hearing, three or more members of the Board vote in favor of finding the accused guilty, the Board shall revoke the certificate of registration of such registered professional engineer.

The Board shall give consideration to complaints and charges of malfeasance and malpractice, and take such actions as their investigations may justify and require.

The Board, for reasons it may deem sufficient, may, reissue a certificate of registration to any person whose certificate has been revoked, provided three or more members of the Board vote in favor of such reissuance. A new certificate of registration, to replace any certificate revoked, lost, destroyed, or mutilated, may be issued, subject to the rules of the Board, and a charge of $3 shall be made for such reissuance.

Violations and Penalties

Section 21. Any person who shall practice, or offer to practice, the profession of engineering in the District of Columbia, without being registered or exempted in accordance with the provisions of this Act, or any person presenting or attempting to use as his own the certificate of registration of another, or any person who shall give any false or forged evidence of any kind to the Board or to any member thereof in obtaining a certificate of registration, or any person who shall falsely impersonate any other registrant of like or different name, or any person who shall attempt to use an expired or revoked certificate of registration, or shall violate any of the provisions of this Act, shall be guilty of misdemeanor, and shall, upon conviction, be sentenced to pay a fine of not less than $100 nor more than $500, or suffer imprisonment for a period not exceeding three months, or both.

It shall be the duty of all duly constituted officers of the law of the District of Columbia to enforce the provisions of this Act and to prosecute any persons violating same. The corporation counsel of the District of Columbia or his assistant shall act as legal adviser of the Board and render such legal assistance as may be necessary in carrying out the provisions of this Act.

Section 21a. This Act shall not be construed to affect or prevent the practice of any other legally recognized profession.

Invalid Sections

Section 22. If any section or sections of this Act shall be declared unconstitutional or invalid, this shall not invalidate any other section of this Act.

Repeal of Conflicting Legislation

Section 23. All laws or parts of laws in conflict with the provisions of this Act shall be, and the same are hereby, repealed.

AN EXTENSIVE PROGRAM

Letter of Congratulation and Instruction Used By New York State Society Contains Suggestions to Other Societies

We have learned that the license to practice professional engineering in the State of New York has recently been issued to you. We extend our congratulations and are glad to welcome you into the ranks of the Licensed Professional Engineers. We also invite you most cordially to become a member of the New York State Society of Professional Engineers, which you may now join.

The license which has been granted you is a distinct recognition of your professional qualifications and attainments, representing many years of study, professional training and experience. As so often happens when a profession has reached a high plane of accomplishment, many attempts are made to circumvent the law by unlicensed persons, with resulting hazards to life, health and property.

The New York State Society of Professional Engineers seeks to limit the practice of Professional Engineering to those who are duly licensed under the statutes, and further, is constantly directing its efforts to protect Professional Engineers against discrimination, inadequate compensation, restriction of rights of practice, the unlawful use and distortion of the designation, competition by the unqualified, and unlicensed and unethical practices. The Society has sought and is seeking to increase the sphere of usefulness of the engineer, and thereby to increase the demand for engineering services. It is seeking to increase the standards of fees and of salaries, and to persuade the general public to recognize and appreciate the necessity for and the high value of the service of the engineer. These matters are being undertaken through united action, through legislation and the enforcement thereof, and through a planned campaign of public education and appeal.

While this Society has accomplished many useful services in the State of New York, it was recognized that action with the engineers of other states would be necessary in order to make the proper presentation of nation-wide matters. Therefore, about two years ago, there was established the National Society of Professional Engineers, of which the New York State Society of Professional Engineers was one of the charter members. National Headquarters have been established in Washington and effective work is being done there and in all parts of the United States.

The State Society now has some 2,000 members in 28 chapters, covering 44 counties throughout the State. Further

chapters are in process of organization. Other states are following the lead of the State of New York in organizing State societies, and it is hoped ultimately to have all the States of the Union represented in the National Society. In order that the work set out for accomplishment be effectively and systematically accomplished, it is desirable to have the participation and support of every licensed Professional Engineer in the State.

We invite your cooperation and we ask you to join our Society now and participate in the satisfaction of professional cooperation, -enthusiastic effort and successful achievement. Membership in the National Society comes only through membership in the State Society, and membership in the State Society is obtained in the County Chapter of the area in which you reside. There are enclosed a booklet of the National Society and of the State Society, together with a card upon which application may be made to the State Society Headquarters, or preferably by communicating directly with the secretary of the Chapter, whose name and address are

We shall deem it a distinct privilege to welcome you into the membership of the Society.

Cordially yours,
JOHN C. RIEDEL,
President.

SERVICE TO THE NATION

(*Continued from page* 15)

Unanimously approved by the CONNECTICUT SOCIETY OF PROFESSIONAL ENGINEERS, INC., in convention assembled, at Bridgeport, Conn. on March 28, 1936.

Attest—JAMES R. MACINTYRE,
Secretary.

This resolution has met with wide approbation from Administrators, Senators, Representatives and Committees in Washington, from the press, from leading editors, from other Engineering Societies, from organized Agriculture, from Governors, State Senators and Representatives, from leading hydraulic engineers and hydrologists, and from many others.

Thousands of copies of this resolution have thus been distributed by mail and by publication, to legislators, governors, engineering organizations, civic bodies, regional planners, etc. The National Society of Professional Engineers, the Illinois Society of Engineers, The Kentucky Society of Professional Engineers, New York State Society of Professional Engineers and Oklahoma Society of Professional Engineers, and many other groups have endorsed it and adopted similar resolutions.

Other professional engineering groups are falling in line as fast as they hold meetings on the subject. The interest of professional engineers of all classifications has been aroused throughout the country.

The endeavor is still in its early stages and is expanding through the efforts of the Professional Engineering Societies in the different States.

It is to be hoped that all Professional Engineering Societies will fully realize the extreme importance of this matter to the nation and to the engineers themselves, and that they will not only adopt similar resolutions but will appoint an active, effective special committee to "follow through."

The Connecticut Society strongly urges a united front on the part of professional engineering societies in other states for the comprehensive planning of all phases of terrestrial hydrology, and the coordination of all projects, plans, forces and activities under a Central Coordinating Engineering Authority.

This may require something entirely new in interstate compacts and federal cooperation, but political barriers, state boundaries, partisan politics, privileges, appointments for political reasons, and other forces disruptive of clear effective engineering planning and execution must be swept aside or subordinated if professional engineers are to do a real job in the salvation of the country.

PUBLIC WORKS APPROVAL

(*Continued from page* 9)

than become inflamed with thoughts of war and vandalism through morale breaking and inactivity. Furthermore, this admirable undertaking was in many instances definitely accomplished, and, at the same time, amazing engineering problems were mastered. Many of the works have lasted until the present time, and are even now of great economic value to the countries through the tourists they attract and the resultant benefits derived through this traffic to the consumer-goods industries.

This country has successfully followed the same principle and has materially stimulated recovery through public works. I believe and think that all my colleagues will also concur that the public-works program was a major contributing factor in setting the wheels of economic recovery in motion. I am sure that economists, business interests, and employees alike will agree that construction work of a permanent nature, work which will result in structures enabling citizens of their communities to live a more pleasant, safe, and useful life are worth while and tremendous value in stimulating direct and indirect reemployment.

The appropriation of $700,000,000, which I have proposed, to contribute 45 percent of a public-works program, will result in a series of projects which total $1,555,600,000; 85.2 percent of the total cost; namely, $1,325,000,000, will be provided for direct and indirect labor. This sum will furnish a year's employment at current wages and salaries to 1,140,000 persons at a per capita cost to the United States Government of only $615.

I am a firm believer in the P.W.A. plan. It is effective immediately, and when the depression is over all of the public dollars expended in the program will be paying dividends in socially valuable, Nation-enriching works. I solicit your support in continuing this program for the benefit of all. I ask your cooperation in securing the necessary funds in relieving unemployment in the heavy industries by direct appropriation or by earmarking a portion of the relief fund to be appropriated in the near future. You will be interested to know that voters have assessed themselves, as local taxpayers, in 2,166 out of 2,613 elections for local contributions of the greater part of the funds required to secure the benefits P.W.A. offers. These local bond elections, in which 10,000,000 votes were cast, show the willingness of communities in your congressional districts and mine to contribute their own funds for P.W.A. projects."

WORK RELIEF—1936-37

(*Continued from page* 5)

projects which are endorsed by local planning agencies where they can be carried out with the classes of labor that are available."

* * *

"The projects to which consideration must be given in planning the extension of the program fall into the following categories:

(1) *Projects which are in operation, but which can advantageously be expanded or extended beyond their present scope.*

(2) *Meritorious projects which have been approved but not yet started.*

(3) *New projects. In the submission of new projects, consideration should be given to the possibility of completing meritorious Civil Works Administration and Emergency Relief Administration projects which have been left in an uncompleted state and are often a cause of public irritation and criticism."*

While W.P.A. prepares to carry on there remains unanswered the great problem of how to get so many people separated from Government payrolls. What is in the making for the future. One may be pardoned for asking—Whence and how will come about widespread non federal employment?

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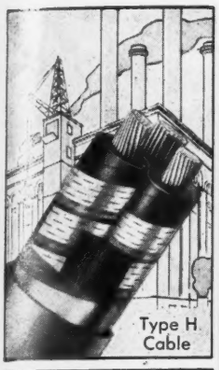
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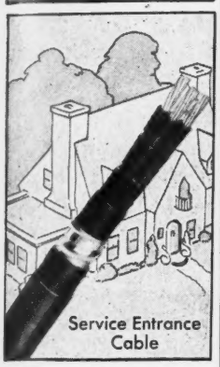
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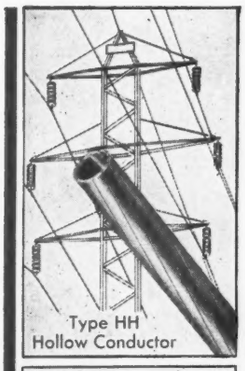
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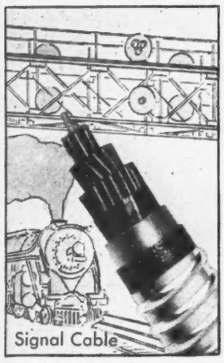
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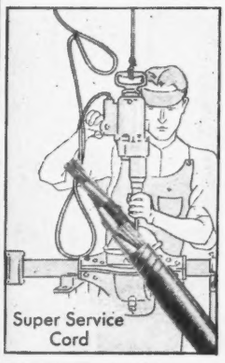
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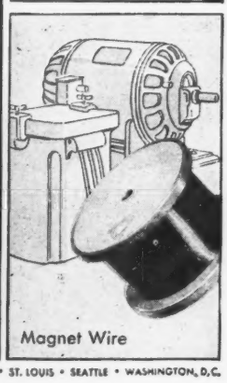
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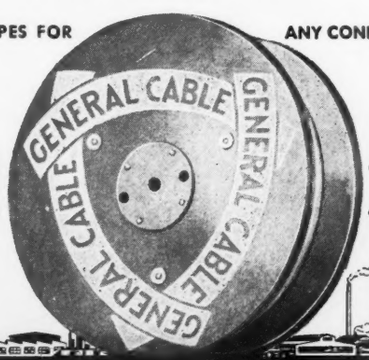

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